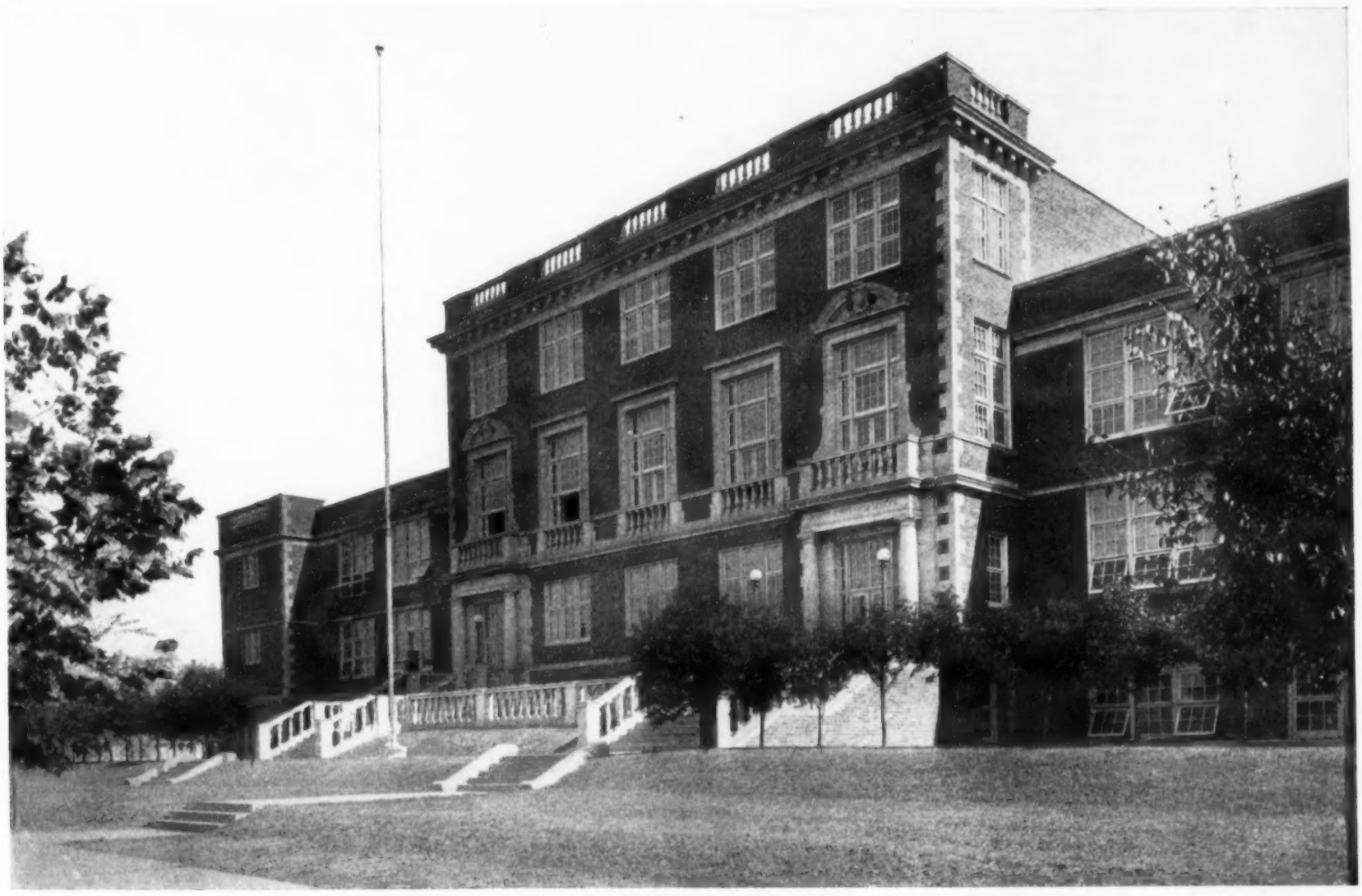
THE AMERICAN
School Board Journal
Founded March, 1891, by WILLIAM GEORGE BRUCE

Volume LXX, No. 1 JANUARY, 1925 Subscription, $3.00 the Year



FOREST AVENUE HIGH SCHOOL, DALLAS, TEXAS.

Let us hope that the educational progress of this country will give to the world architectural masterpieces, just as the religious enthusiasm that swept over Europe during the Middle Ages gave to the Old World, the grandeur of the great churches and cathedrals.

St. Louis, Mo.
Wm. B. Ittner, Architect,

A Quarter Century in Schoolhouse Planning and Construction

Wm. B. Ittner, F. A. I. A., Architect and School Specialist, St. Louis, Mo.

The quarter century just passed has been unusually significant in its contribution to schoolhouse planning and construction. The accepted changes which will continue to influence and advance the science and art of school architecture may be summed up in the following four points:

1. The development of plan efficiency due to the evolution of the "open plan" and to expansion and improvement in educational thought and practice.

2. Significant improvements in such matters as safety, lighting, heating and ventilation of schools.

3. Increasing emphasis on the beautification of exteriors and interiors.

4. The scientific study and application of the principles of sane, sound and lasting economy.

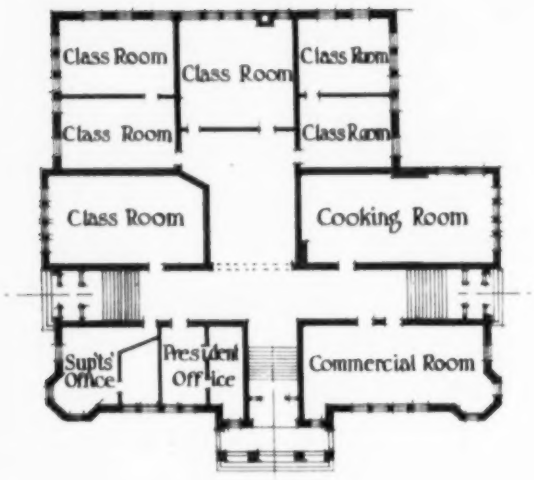
The Evolution of the "Open Plan"

The typical school of 25 years ago is not difficult to visualize. There are still too many of them scattered around to permit relegation to memory's gallery. Made up of badly-lighted, ill-proportioned classrooms, coat rooms and dark halls, of frame construction, closed-in, insignificant and forbidding in appearance, and deserted most of the time they represent an era in American education closely akin to the "dark ages."

The beginning of the present century ushered in the initial steps in what is known as "open plan" development. The early attempts secured only a partial opening of the closed-in type but brought about a better distribution of sunlight and air throughout the building. The introduction of the kindergarten, the auditorium and the gymnasium offered a remarkable impetus and succeeding steps in development represented a far more radical departure from the old school. The architect with insight and foresight discovered all kinds of possibilities in plan development and elasticity. Today, instead of a uniform and stereotyped plan, therefore, we have a number of varieties, some more efficient than others but most of them exhibiting at least a measure of skill in schoolhouse planning and design.

The Significance of Curricular Expansion to the Schoolhouse Planner

Curricular expansion during the past 25 years with its consequent demand for additional facilities and the diversification of the same, has brought the present-day school building, although a specialized problem, into rank with the most important and interesting architectural projects. The kindergarten becoming



AN EXAMPLE OF A "CLOSED PLAN" REPRESENTING THE AVERAGE TYPE OF PLAN USED A QUARTER CENTURY AGO.

AN EARLY STEP IN OPENING THE "CLOSED-IN" PLAN, COMMONLY KNOWN AS THE DUMB-BELL TYPE OF PLAN.

quite generally established in the elementary schools from 1900 to 1910, called for some modification of the classroom. In the high schools, the auditorium added an interesting problem. The later periodical additions of health quarters, shops, special rooms and libraries to both kinds of schools, tended to make school planning interesting, but complicated. Architects, experienced, and of high standing in their profession were attracted to the problem. During the last decade when elementary schools include such an array of facilities as gymnasiums, dressing rooms and showers, auditoriums, work shops, libraries and cafeterias, and high schools in addition to these, laboratory, commercial and art groups, it is evident that schoolhouse planning has become a specialty. It requires a particular kind of knowledge, experience and skill. Even the architect who is generally successful frequently fails in the planning of schools due to the lack of the particular understanding and specialized skill required. In the main, therefore, the architects who have made notable achievements in schoolhouse planning have been those who have coped with the school building problem through its various stages of growth and have thereby developed a skill which can not be matched by ordinary training and general practice.

Important Safety Measures

More attention and study have been given to safety methods and devices in schools during the last 25 years than during any previous period, due chiefly to the congestion of urban centers, the consequent enlargement of schools and the increased fire hazards. Fire-resistive construction has gradually replaced the non-fire-resistive. The rapid narrowing of the margin between the initial cost of the two kinds and the advantages of durability are largely responsible for the extraordinary increase in fireproof buildings within the past few years.

The most important safety measure originated with the "open plan" and with its possibility for circulation and egress. The history of school fires indicates conclusively that mortality was due chiefly to panic. Stairways and corridors, correctly proportioned, sufficient in number and properly placed to serve definite groups of rooms, and an adequate number and correct location of exits constitute the most important safety contribution of the past quarter.

The reduction of fire hazards is another contribution to safety. The elimination of basements, the isolation of the heating plant, the modern methods of electrical installation, together with the enlarged site and the care in its selection and development, have all aided in preventing fires.

Lighting

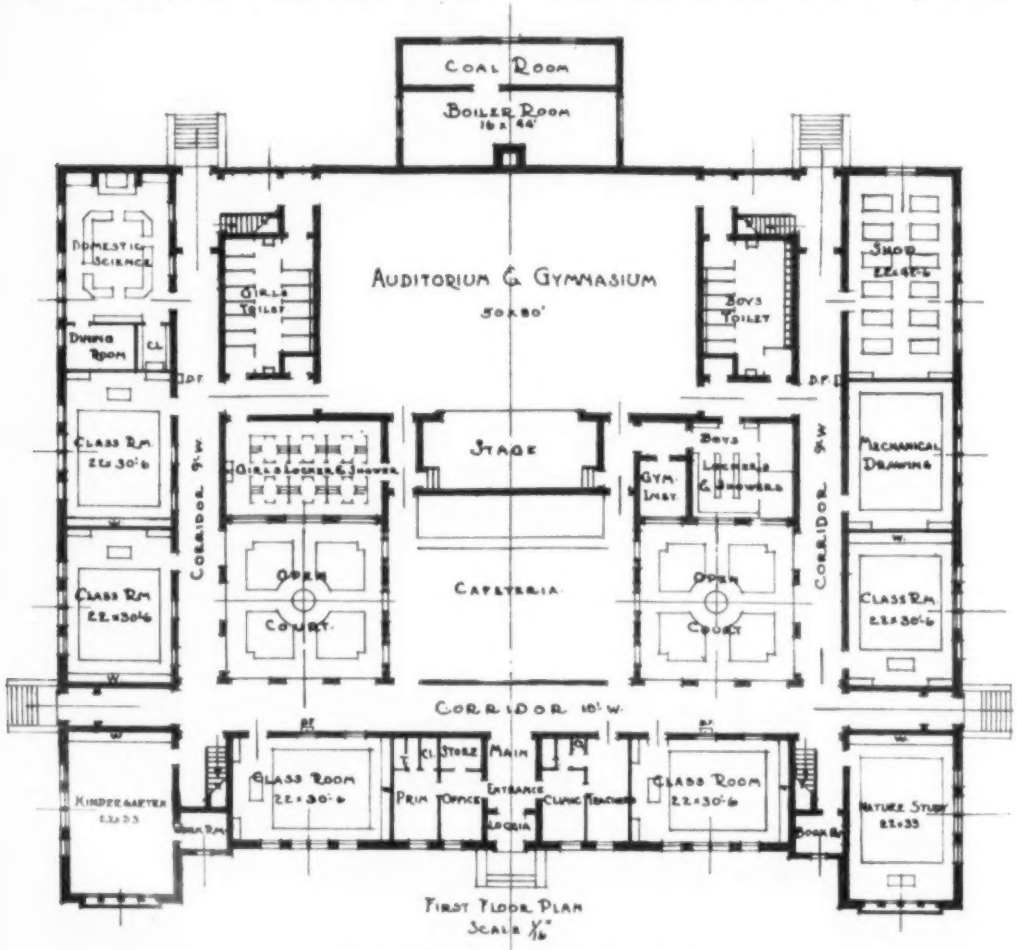
As in safety, the important improvements in lighting of schools originated with the "open plan" development. Maximum natural lighting, as well as ventilation, was thereby assured. Studies in kind and quantity, viz., in adjustments of lighting and the application of results to varying latitudes, have contributed much to satisfactory results. The more recent investigation on the light refractory qualities of color tones and the undesirability of highly polished walls and furniture, has resulted not only in a more beneficial lighting for the children but also in a more pleasing schoolroom atmosphere.

Artificial Lighting

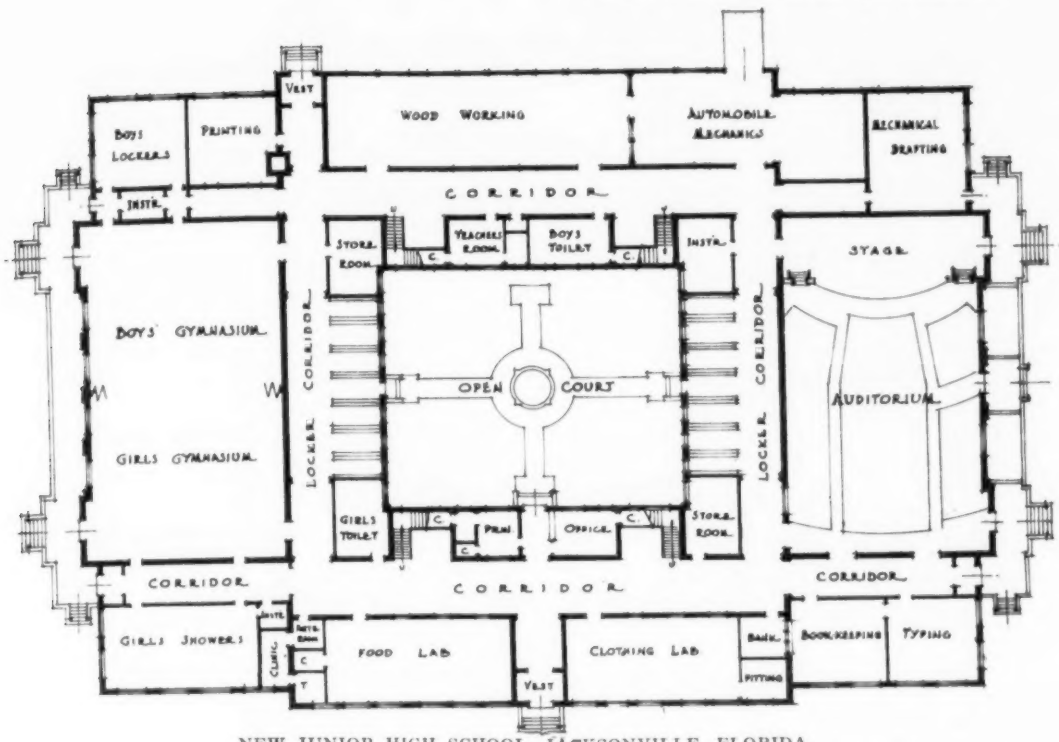
An electric lamp unit suspended from the center of the ceiling by a long exposed wire constituted the average artificial lighting of a schoolroom 25 years ago. To be sure there were few, if any, evening classes. But there were many dark days, and undoubtedly there are armies of adults today bearing the smart of defective vision due to insufficient or improper lighting of the old school. The distribution of electrical lamps today is measured on a scientific basis. Efficient lamp units are produced and better fixtures available. There are now direct, semi-direct, and indirect lighting in schools. Practically any intensity or any effect desired, is obtainable.

Heating and Ventilation

More exhausitve studies have been made on heating and ventilation than on any other phase of school building. All are agreed that air movement, normal humidity, proper temperature and removal of dust are the essentials to good ventilation. The ways and means of securing the result desired are many and varied. None are perfect. In spite of the short-comings in the practice of heating and ventilation the fact remains that all equipment has been substantially improved, due to constant experimentation, to new mechanical aids, better design and correct installation. An increased knowledge on the part of the engineers who handle and manipulate the apparatus daily has assisted materially in working out the problem. Adjustments whereby heating and arti-



GOLIAD SCHOOL, GALVESTON, TEXAS.
Wm. B. Ittner, Architect, St. Louis, Mo.; De Witt & Lemon, Associate Architects, Dallas, Texas.
Curricular expansion during the past 25 years with its demand for a diversification of facilities has brought the art of schoolhouse planning into line with that of the most important architectural problems of the time.



NEW JUNIOR HIGH SCHOOL, JACKSONVILLE, FLORIDA.
Greeley & Benjamin, Architects; Wm. B. Ittner, Consulting Architect, St. Louis, Mo.
The "open plan" offered all kinds of possibilities for elasticity and variation in plan development.

ficial ventilation may be restricted to certain quarters in the buildings, such as auditoriums, shops, libraries or gymnasiums, and the ease with which temperature can be controlled are the results of studies during the last fifteen years.

The Schoolhouse Beautiful

The "open plan" which made for elasticity of plan and design, the expansion of the educational facilities, centralization, and the large sites which make possible a proper setting of the building have contributed to beautiful exteriors. This has all come about during the last 25 years.

The school of a quarter century ago was never regarded as a civic or architectural asset. It was entirely forgotten when an inventory of the beauties of a city were considered. The high schools were the first to project themselves as structures of architectural merit. Within the last decade, however, elementary schools and all other types and kinds, have become potent factors in the development of the esthetic side of communities.

Twenty-five years ago schools looked very much alike. Today there is variety, and every building, if designed by an experienced school architect, has a distinctive character of its own. The school designer now may go with safety to precedent for his inspiration. He has the opportunity to give a new breath of life to old forms. Brick, the school architects' friendliest and most common material is wonderful in its possibilities for blending of colors, giving exteriors a richness scarcely possible with other materials.

One finds occasionally even now the mistaken idea that beauty consists of ornamentation. Quite the reverse is true. Beauty has come only by skilful handling of mass and detail. Some of the most beautiful buildings are devoid of ornament. The vital spark really lies in the frank and natural development of elevations which are the out-growth of well-thought-out plans. As soon as communities generally realize that art in school buildings is not an extra item of expense, but rather a matter depending on the knowledge, ingenuity and artistic skill of the school architect, taxpayers will demand beautiful schools. Let us hope that the enthusiasm with which the country has taken up the work of rebuilding its schools, making architectural gems, as well as utilitarian agencies of them, will give to the world educational masterpieces, just as the religious fervor that swept over Europe during the middle ages gave to the old world the grandeur of the great churches and cathedrals.

The Practice of Sane Economy in School Building Is One of the Recent Contributions

The gradual cost of the expansion of the school plant due to educational expansion was cheerfully borne by taxpayers in the earlier years of the present century. It was not until the beginning of the world war causing the unusual inflation of prices of labor and materials, that the problem became serious. The final participation of our own country in the struggle settled the problem temporarily by a ban on building operations. Contrary to hopes, there was little recession in prices after the war. Added to the continued high costs and accumulated building shortage came the extraordinary enrollment increases, especially in the high schools. The problem, therefore, of maintaining the high standards established a decade or more prior to the war and in supplying the needed accommodations appeared to taxpayers well-nigh insurmountable.

Communities pursued various methods in attempting a solution of the problem of high costs, enriched schools, and increasing enrollments. Some called for retrenchments, some for the impossible, while others began a scientific study of the problem. The outcome has led to the following contributions to schoolhouse planning and educational efficiency which may be considered the most valuable of all improvements during the past quarter century, since communities can now afford efficient, enriched, and beautiful school plants if they adhere to and emphasize the following principles of sane and sound economy:

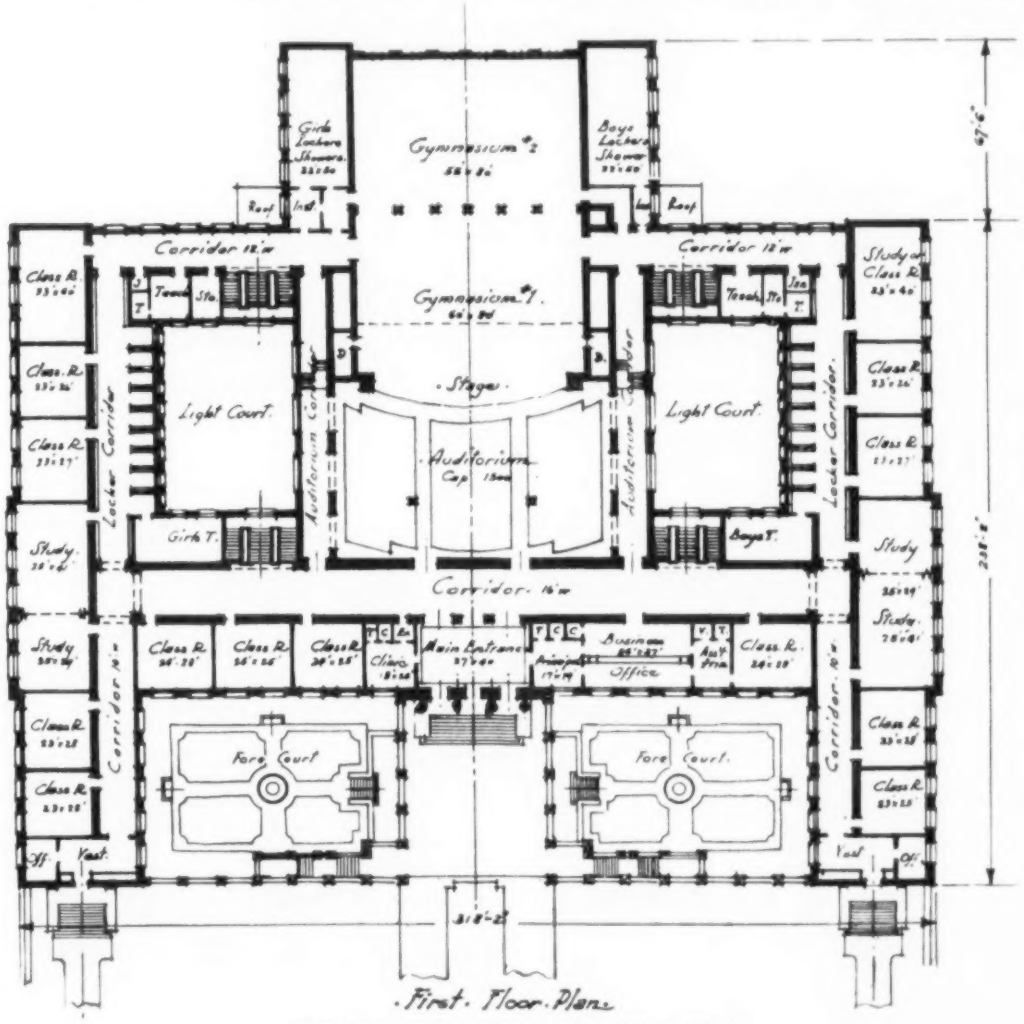
1. *Adaptation of building plan to educational program and type of organization.*

The application of the principle of adaptation has necessitated a close relationship between the architect and the superintendent of schools. In fact, the development has already reached the point where the architect may use the superintendent's proposed plan of operation as his guide in plan development. Such a guide is particularly useful when planning schools for the platoon type of organization, if the desired economies are to be secured.

Adaptation involves skilful planning and it is skill rather than rules and regulations that has eliminated waste and raised the service efficiency of school plants.

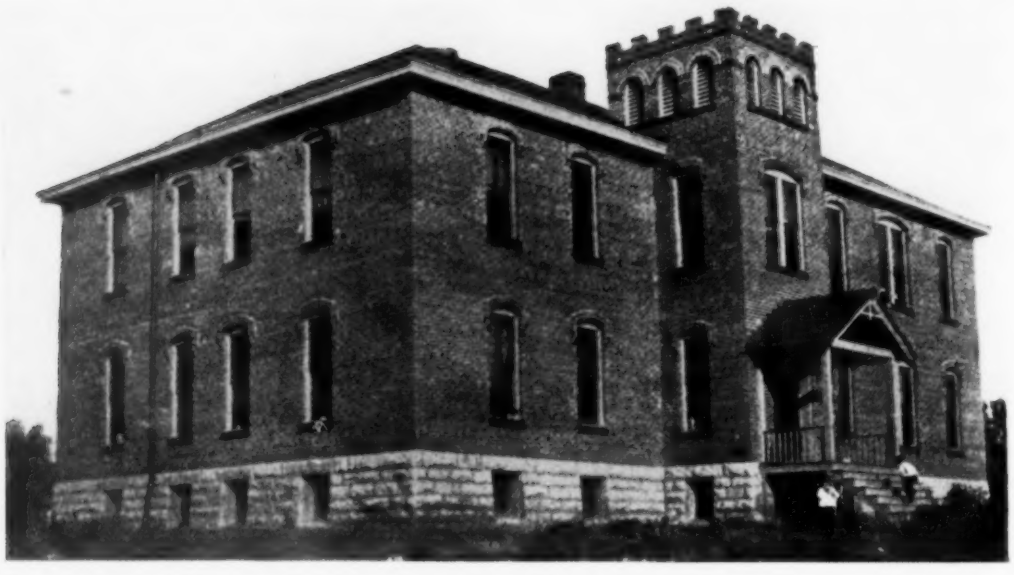
2. *Centralization, or the building of larger and fewer schools on enlarged sites.*

Supplanting a number of small, segregated schools by fewer enlarged and enriched units has become an important economy measure.



CENTRAL HIGH SCHOOL, COLUMBUS, OHIO.
Wm. B. Ittner, Architect, St. Louis, Mo.

The most important safety measure originated with the "open plan" and its possibility for circulation and egress. Stairways and corridors, correctly proportioned, sufficient in number and properly placed to serve definite groups of rooms, together with an adequate number and correct location of exits constitute the most important safety contribution of the past quarter century.



A typical school of 25 years ago. Unsafe in plan and construction, improperly lighted, forbidding in appearance, and located on a barren, restricted site, the school of yesterday stands now as a relic of the past century.

when desired. The Woodlawn and Phillips High Schools begun under previous bond issues are being completed now under the present bond issue.

4. *Periodical surveys of school building needs.*

A scientific study of immediate and projected needs has proved its significance to economy. Guesswork belongs to the past and has been superseded by an accumulation, analysis and interpretation of facts to serve as a basis for plan and action.

The quarter century just passed has unbolted the door for the one to come. The next 25 years will, no doubt, see the public school building issue forth in all its glory, the great treasure-house of learning, a thoroughfare of opportunity for youth and all mankind, the great leavener in Americanization, a model of health and plan efficiency, a gem in architecture. In short, the expression of the multitude now within its portals, who having seen the light will issue forth as an American populace sympathetic in understanding, noble in thought and aspiration.

LIBERTY MEMORIAL HIGH SCHOOL,
LAWRENCE, KANS.

The school designer may go with safety to precedent for his inspiration. He has the opportunity to give a new breath of life to old forms.

Wm. B. Iittner, Architect,
St. Louis, Mo.

The Emerson School at Gary, Ind., built more than 15 years ago was probably the earliest example of centralization. A more recent example is the three-building group at Greenfield, Ohio. These two schools include all grades. The new Emerson School at Dayton, Ohio, is a centralized unit including the elementary and junior high school grades. In Birmingham, Ala., the policy of building larger and fewer schools is adhered to, although the usual plan of segregation of elementary and secondary schools is continued.

3. *An elastic building plan.*

Elasticity of building plan has become an important item in economy. A successful schoolhouse plan offers every opportunity for alteration and expansion at a minimum cost. Buildings can also be erected by units. In Birmingham practically all the new elementary schools are being developed by the unit method. In some cases there is only the initial unit of the building with provision for the remaining units

MAPLE AVENUE ELEMENTARY SCHOOL,
NIAGARA FALLS, N. Y.

Wm. B. Ittner, Architect,
St. Louis, Mo.

Beauty has come only by skilful handling of mass and detail. Some of the most beautiful buildings are devoid of ornament. The vital spark in design really lies in the frank and natural development of elevations which are the outgrowth of well-thought-out plans.

Dependence of School Architecture upon Educational Engineering

Clarence D. Kingsley, Educational Engineer, Chicago.

In the last few years I have conferred with school boards, superintendents of schools, or architects on their problems in planning school buildings in approximately 100 cities and towns scattered over ten states. I am more than ever convinced that the procedure in planning would be simplified, costs reduced, and greater returns for the money secured if the relations between the architectural and the educational factors were more clearly understood. Specialization within the field of architecture is producing architects who are mastering the distinctive architectural requirements of school buildings, and specialization within the field of education is producing educators who are mastering the educational requirements. The architectural and the educational requirements, however, must be coordinated before a satisfactory school building can be evolved. Hence, there must be cooperation between these two types of specialists.

The purpose of this article is to analyze three essential steps that should be taken before the architect is really ready to draw the preliminary or sketch plans. Each of these steps deals with the educational requirements and is primarily educational rather than architectural.

I. Schedule of Rooms

The first step should consist in working out a scientific and specific schedule of rooms. This schedule must state the necessary number of rooms of each type and the pupil capacity of each room. It should list also such auxiliary rooms as offices, teachers' work and rest rooms, clinic, storage and supply rooms, social or club rooms, and cafeterias, with some indications as to their areas and functions.

This schedule must be based directly upon the program of studies and the community purposes to be served. For an elementary school under the traditional organization, the schedule is comparatively simple. Under the platoon organization, it is less simple. For a junior or senior high school, the schedule of rooms depends upon many factors, such as the following:

1. *The length of school periods and the number of periods in the school day.* Some high schools have eight periods of 45 minutes each, while others have six periods of 60 minutes each. The former plan requires fewer classrooms and more study-hall space than does the latter. Wisdom, however, dictates that a building should be so planned that it can be used efficiently under either plan. This flexibility may be secured in part by planning one or more pairs of classrooms so that each pair can be converted at minimum cost into a study-hall, or vice versa. Junior high schools are generally planned without study-halls, as their programs provide for few, if any, periods for unsupervised study.

2. *The time allotments for the various subjects.* At present the variation in the time allotments in certain subjects differs greatly, especially in junior high schools. This variation is marked in science, art, shopwork, and physical education. The time allotments must be decided before the number of rooms necessary for these subjects can be scientifically determined. Flexibility, however, must be provided in the building to adjust it readily to reasonable future changes.

3. *The percentages of pupils likely to take each subject.* Here a knowledge of educational trends is necessary together with the ability to estimate the probable effects of the introduction of new subjects and better equipment, such as should be furnished in a new and modern building.

4. *The maximum and the average size of classes.* In some schools classes are larger than is consistent with the best results, and in other schools classes must be made somewhat larger than at present in order to finance higher salaries for better trained teachers and to finance important educational functions, such as educational and vocational guidance, deanships, libraries, adequate physical education, and a more democratic offering of varied courses to meet varied needs. More skilful administration of the daily schedule will, in many cases, reduce the number of undersized classes, thereby raising the average size without raising the maximum size of the class.

5. *The number of classes likely to be required in each subject.* These numbers are readily obtained when the preceding data are available. The general rule is to divide the number of pupils likely to take the subject by the average size of classes to be maintained in that subject.

6. *The number of rooms needed in each subject.* These numbers can also be obtained by a simple mathematical process when the time allotments and the number of periods in the school day are determined. At this point, however, we meet the importance of a common denominator, or a block system, in time allotments in order that each room may be used continuously for its specific purpose when the maximum capacity of the school is reached.

7. *The future growth that should be provided for in future extensions to the building.* Seldom has this phase of school planning been given adequate attention. The only safe method is to draw up a second schedule of rooms to meet the needs of the enlarged school. It may then be possible to plan some of the departments, large enough at the outset, to meet future needs and to use the extra space temporarily for classrooms. By this method a future extension may consist more largely of classrooms, and the rooms of these special departments may be always in correct relation to one another.

In connection with the schedule of rooms I desire to point out three facts commonly ignored:

(a) Important economies in building costs are possible if sufficient study is given to the schedule of rooms.

(b) The making of these economies requires a thorough analysis of all the factors and familiarity with the various methods for securing such economies, such as workable time allotments and duplicable uses for certain rooms otherwise usable for only part time, especially in small schools.

(c) These economies can, and should be made, without sacrificing real educational efficiency.

From the foregoing analysis, it is evident that the development of a scientific schedule of rooms for a new building is an educational and not an architectural problem. The original data must be secured through conference with the local school authorities because local needs vary, and because local methods of school administration must be adapted to local conditions. The organization of these data into a schedule usable by the architect, and so worked out in all its details that maximum economy and efficiency will be secured, constitutes a very genuine problem in educational engineering. The term "engineering" is here used because engineering in any field means the application of exact principles so as to secure maximum economy and efficiency. When the importance of this step in planning junior and senior high school buildings is fully recognized, superintendents and school boards will seek the assistance of persons who have given extended study to this phase of educational engineering. Its technique is not simple, and hence the only safe rule is to secure the best advice obtainable.

II. Layouts

The second step in the scientific planning of a school building consists in developing *layouts,* or floor plans, for the various types of rooms adapted to the educational needs in the particular school. The experienced school architect may guess at the sizes of these rooms, but his preliminary guesses must be revised before his work can proceed very far, if waste is to be avoided. Where time permits, the layouts should be made accurately before even the sketch plans are drawn.

The development of effective layouts demands much more careful study than has heretofore been devoted to them. The size and shape of the room, and the selection and arrangement of equipment, must be a direct expression of, and in fact grow out of, the nature of the work to be conducted. A room can be too wide or too narrow, and too long or too short, for the most effective conduct of the work. Space economy is important not only to reduce building costs, but also to bring the pupils into a position, where they can see and hear without strain and where the teacher can supervise the work without excessive travel. On the other hand, a room that is too small either unduly limits the size of the class, thereby increasing the cost of instruction, or else results in crowding the pupils and cramping them in their work.

The principal point at which architectural or structural considerations affect the layout of rooms is in the determination of their desirable width, that is, the distance from window wall to corridor wall. Most academic, commercial, and science rooms should have unilateral light. Present practice ordinarily consists in giving these rooms a width of not less than 21 and not more than 26 feet. A width of 21 to 22 feet necessitates increased length of room, while a width of 25 to 26 feet necessitates increased height of windows and ceilings.

My studies seem to indicate that, with standard fireproof construction and with classes of the sizes ordinarily found in cities, the best solution consists in making these rooms approximately 24 feet in width, while a somewhat greater width is desirable for cooking rooms and for certain science laboratories under certain conditions. This conclusion is at variance with the practice of many architects who adopt approximately 22 feet as the standard width.

A second point at which architectural and structural considerations affect the layout of rooms is in the disposition of certain cases and wall equipment. Neatness and space economy are ordinarily secured when certain cases are built into the walls, especially into the wall between room and corridor, instead of being placed against the wall. The tops do not gather dust and the cases themselves do not project into the aisles. The building-in of cases does not prevent the purchase of ready-built cases, as their depth has been standardized, but it does emphasize the necessity of developing room layouts before sketch plans are completed.

The scientific development of the layout of any room involves many factors, such as:

a. The maximum number of pupils to be accommodated in the room.

b. The sizes of pupils' equipment, such as desks and seats, tables and chairs, benches and stools adapted to the nature of the work and complying with correct principles of posture.

c. The width of aisles and spaces.

d. The arrangement of pupils' equipment to

give proper lighting of working surfaces, ease and safety of circulation by pupils, and reduction of distances to be traveled by the teacher in supervising the work.

e. The size and location of demonstration tables.

f. The proper amount and location of blackboards, tackboards, and whiteboards.

g. The proper provision for reference books and general supplies.

h. The storage, keeping, and display of illustrative material, such as maps, charts, commercial products, plants, and animals.

i. The safe and adequate storage of pupils' individual materials in individual drawers in pupils' tables, with considerations as to knee-space in tables, and the keeping of keys. Sometimes these problems may be solved more effectively by the use of tote-boxes or tote-trays kept in compartments locked by classes.

j. The location of lavatories, sinks, ranges, and hoods; telephones, thermostats, and thermometers; and outlets for electric current, gas, and electricity.

The inference is commonly made that the actual planning of a good layout is a simple matter requiring little skill or study. Such is not the case. Not only must all the above factors be known, but patient study and considerable skill is required, to eliminate waste and to put all the parts in proper relationship to one another. Repeated efforts must be made, and layouts once drawn must be studied in actual operation so as to eliminate defects. Every foot saved in the length of a room may mean a saving of several hundred dollars, but rooms in which equipment and spaces are cramped are not satisfactory. The making of effective layouts is, therefore, an important phase of educational engineering.

III Educational Considerations Affecting the Location of Rooms and Departments

The third step in the scientific planning of a school building consists in analyzing the educational considerations affecting the location of rooms and departments. Apparently some architects attempt to carry these considerations in their sub-conscious minds, trusting to luck that the plan will work out satisfactorily in the end. I am here recommending that these considerations be thoroughly analyzed and written down before the actual drawing of the sketch plan is begun.

Some of the educational considerations with reference to the location of rooms and departments may be stated as follows:

1. *Accessibility for community and evening school uses.* Certain rooms should be so located that they can be used in the evening, without giving access to other rooms and without heating and lighting the entire structure. The rooms most commonly used in the evening by large numbers are the auditorium and the gymnasium. This fact is, to an increasing extent, leading to the placement of these facilities in a distinct part or parts of the building, with independent public entrances and exits. Such a location of a gymnasium prevents the noise from reaching classrooms, often affording better natural ventilation and more sunlight. The location of an auditorium in an end or wing has been objected to on the ground that more time is required for a large body of students to fill and empty it than would be required with a central location. Many persons raising this objection fail to observe that the central location tends to separate the classrooms, and hence increases the time required several times a day for the change of classes.

Cafeterias may be useful for community gatherings when placed in relation to auditoriums or gymnasiums.

A social room used during school hours by the dean of girls, or for classes in social usages, or as a school reception room may, when articulated with a main entrance, be used by evening groups and clubs.

Shops are extensively used in some cities for evening vocational classes and herein we have an added reason for locating them in a distinct section.

In some cities, the school library is used also as a public branch library. Success or failure in such use has been found to depend very largely upon the placement of the library on the ground floor with a direct public entrance. On the other hand, certain relationships with reference to study halls may be worked out more satisfactorily when the library is located on the second floor.

2. *Departmental Grouping.* In a large high school the grouping of the rooms of a department is desirable on account of such considerations as the handling of supplies, the interchange of rooms by the teachers of the department, the correlation of related work, the departmental supervision of instruction, and the building up of a departmental spirit of cooperation. For instance, the relationships between the different sciences is intimate. The teaching of sewing, cooking, home nursing, and home management all center around the home and these subjects must be correlated at many points. The best educational practice in commercial subjects consists in treating them as related parts, and some of the most efficient commercial departments are organized with a director, whose function it is to study the commercial department as a whole and to keep it abreast of the needs of the world of commerce.

Then, again, some of the departments are interrelated. Art is related to home economics while much of the work in mechanical drawing is related to shop work. English and the social studies are dependent upon the library to such an extent that the library is sometimes spoken of as the laboratory of these subjects.

3. *Orientation.* Classrooms require unilateral lighting and need sunlight during a portion of the day but the glare of direct sunlight in the middle of the day should be avoided. The desired results may, as a rule, be best secured when classrooms are placed on either or both sides of corridors extending north and south. With this placement the classrooms will have eastern or western exposures.

Mechanical drawing, art, and sewing rooms require a soft, steady light. Hence they should have a northern exposure. Cooking rooms, where ranges are in operation, become superheated and hence a corner location to give cross ventilation is ideal. Plant rooms require an abundance of direct sunlight and hence should have a southern exposure. Gymnasiums should have an abundance of sunshine and, as will be mentioned later, they should be so placed as to have windows on at least two sides. Swimming pools especially need direct sunlight. Shops need much light to make good workmanship possible and the light may well come from more than one direction so as to illuminate every part of the work. The saw-toothed roof with northern exposure combined with side light gives ideal results. Toilet rooms should have direct sunlight during at least a part of the day for obvious reasons.

Some architects seem adverse to placing compass arrows on their plans. One often wonders whether they erase them because of poor orientation. In my opinion, the arrow should be placed on the sheet, before any other lines are drawn, so that the draftsman will give continual thought to correct orientation.

4. *Natural Lighting and Natural Ventilation.* The proper natural lighting and ventilation of all rooms of the building demands that courts, when they are necessary, should be of adequate width. A court open at the southern end is far preferable to a closed court. Provision for forced ventilation tends to obscure in the mind the fact that fans are not running all the year. Sole reliance upon such fans is especially objectionable in the case of gymnasiums.

In mild weather a gymnasium should be little more than a floor and a roof. To be a "hall of health" every gymnasium should have natural cross ventilation, that is, windows should be placed on two opposite sides, and when possible on three or even four sides. To avoid dead air pockets, the windows on at least one side should extend down nearly to the floor level. This conclusion is in direct contradiction to the advice commonly given by makers of gymnasium apparatus who recommend that no windows should extend down nearer to the floor than six feet. Wall apparatus today in modern school gymnasiums is limited, and physical education directors with whom I have conferred generally agree that an abundance of fresh air is a prime essential in gymnasium requirements. The notion that a gymnasium can be ventilated solely by forced ventilation and skylights seems to me especially harmful. The common location of gymnasiums under auditoriums generally results in bad conditions. It would be better to place the gymnasium over the auditorium if one had to choose between the two evils. The placement of the gymnasium above the locker and dressing rooms in a separate building or wing, is ordinarily the ideal solution.

5. *Protection from Noise and Odors.* It is extremely important that all classrooms should be so located that the work will not be made difficult by noises and odors. Of course, the location of a school building on a noisy thoroughfare should be avoided, but one can seldom be quite sure where future car lines may run. If a noisy location must be used, classrooms might better be placed on large inside courts open at one end when possible. Music rooms, shops, gymnasiums, and swimming pools must be placed where their noise will not disturb classrooms. Cafeterias must be so placed and constructed that their odors will not permeate the building.

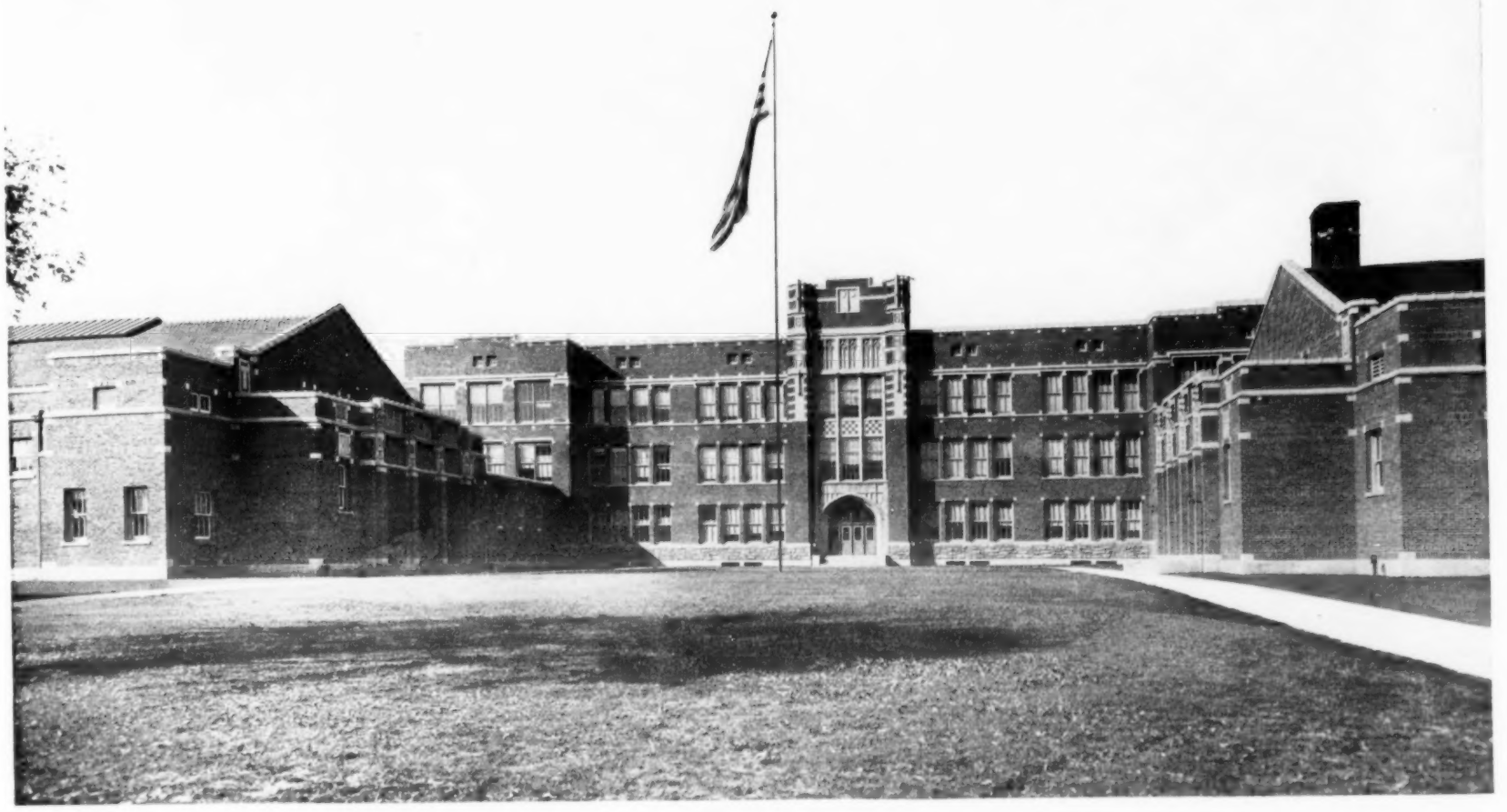
6. *Reduction of Travel.* The traveling of ordinary horizontal distances by pupils between classes may be regarded as beneficial rather than disadvantageous, especially if corridors are well lighted and ventilated. Even traveling from one building to another would be advantageous, although some people prefer covered passageways to avoid exposure to sudden changes of temperature. There are valid objections to excessive vertical travel, such as is found in buildings of four or five stories without elevators.

7. *Supervision of Corridors.* Long, straight corridors, and when necessary side corridors, at right angles thereto, give the best conditions for effective supervision. Short corridors off from side corridors are especially objectionable. Every corridor should be well lighted. Frequently corridors could be extended through to outside walls, giving outlook as well as light. The ends when not occupied by stairways may be used economically for teacher-stations or offices, and separated from the corridor by a clear glass partition and a glass door.

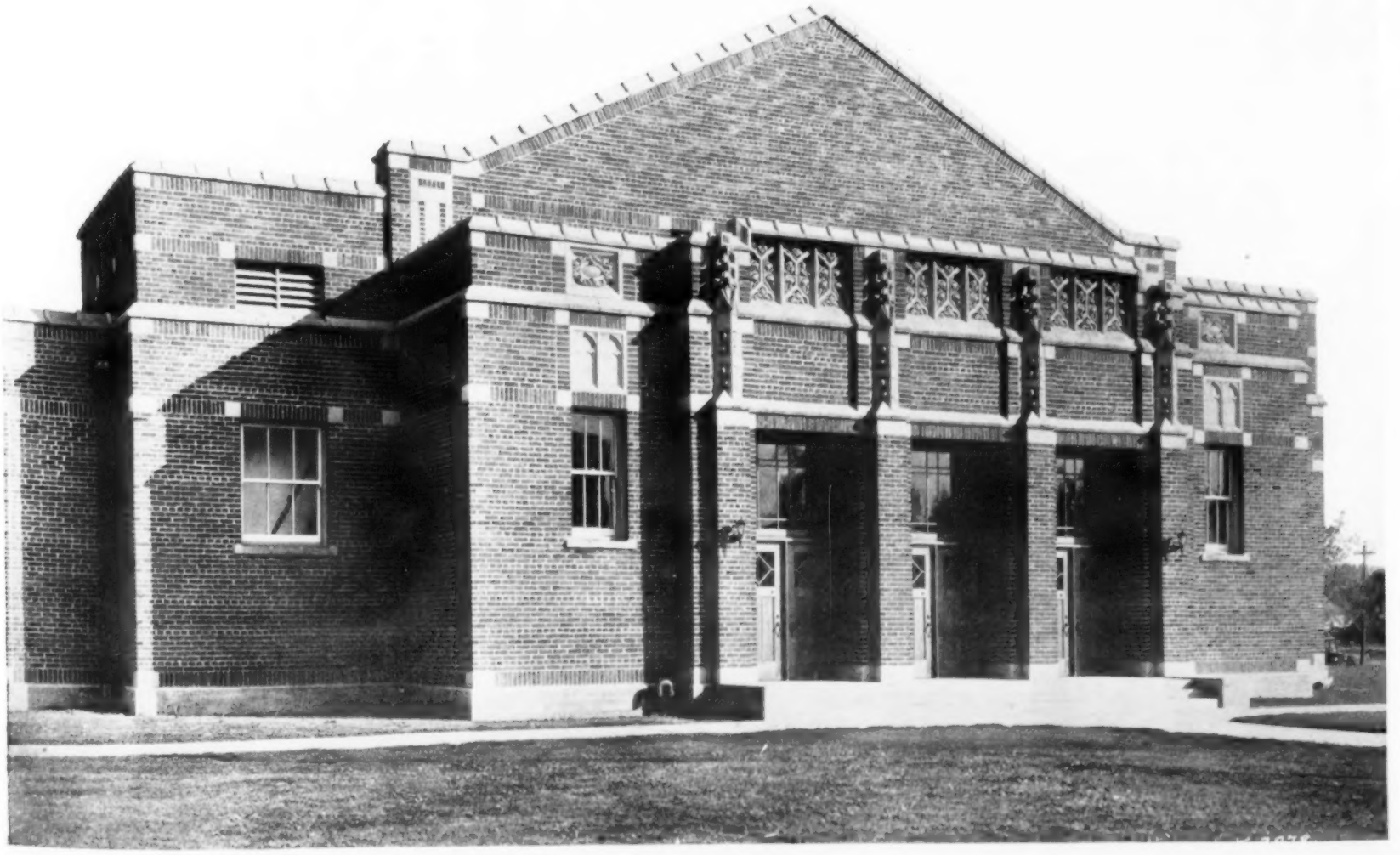
The foregoing analysis of educational considerations affecting the location of rooms and departments is general and incomplete. In planning a specific building many additional considerations will be outlined by the skilful engineer.

Conclusion

This article, dealing as it does with the schedule of rooms, layouts for rooms, and educational considerations affecting the location of rooms and departments, may serve to indicate the kind of data that the educational engineer should furnish to the school architect. This service should greatly assist the architect. It is here conceived as a specialized form of educational service.



EAST FRONT.

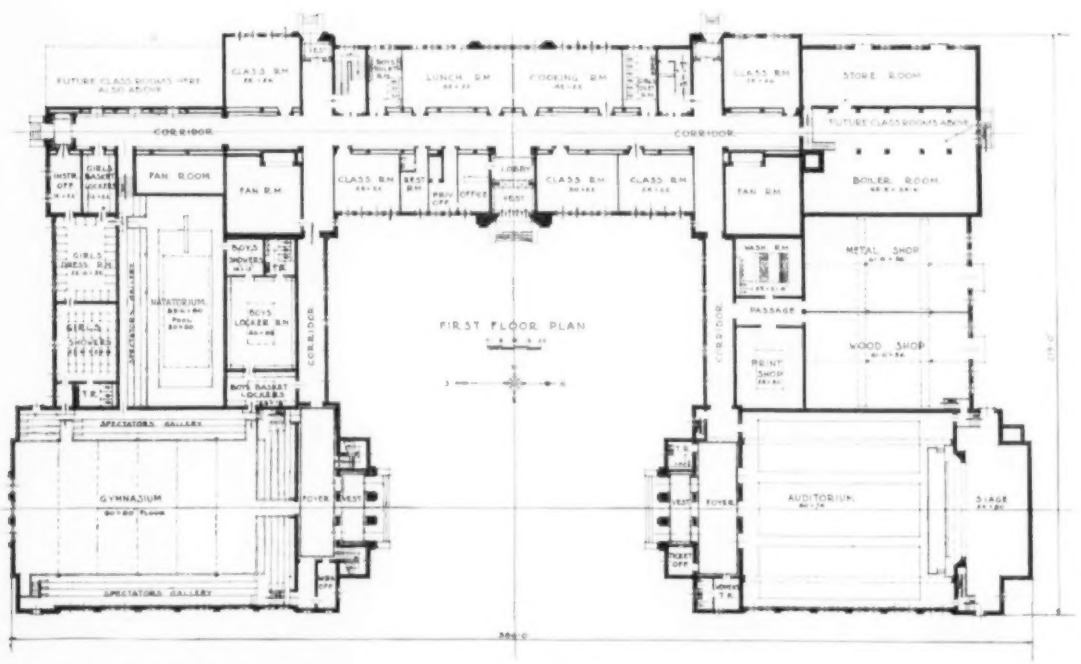


AUDITORIUM.

THOS. L. HANDY JUNIOR HIGH SCHOOL, BAY CITY, MICHIGAN.

PERKINS, FELLOWS & HAMILTON, ARCHITECTS, CHICAGO, ILL.

CENTRAL ENTRANCE OF THE THOS. L. HANDY JUNIOR HIGH SCHOOL, BAY CITY, MICH.
Perkins, Fellows & Hamilton, Architects, Chicago, Ill.



FIRST FLOOR PLAN OF THE THOMAS L. HANDY JUNIOR HIGH SCHOOL, BAY CITY, MICH.
Perkins, Fellows & Hamilton, Architects, Chicago, Ill.

THE THOMAS L. HANDY JUNIOR HIGH SCHOOL, BAY CITY, MICHIGAN, AND THE JULIA E. TEST JUNIOR HIGH SCHOOL, RICHMOND, INDIANA

Perkins, Fellows and Hamilton, Architects
Chicago, Illinois

These buildings illustrate the partial development scheme necessitated by the postponement of a portion of the requisite funds.

No community has stopped having children, and manufacturing is causing an increase of population in most cities. The result is ever developing school attendance while all taxing machinery is of a date prior to the war. Each dollar raised by taxes is, therefore, only fifty cents, relatively, because our taxing laws were written when we could build an absolute fireproof structure for fourteen cents per cubic foot. Now that same structure costs twenty-eight cents.

The photographs show the finished portions of the Test School. The plat plan shows the assembly hall and domestic science portions to be built in the future. It also shows the playground facilities.

At the Handy School a much greater portion is now complete; only additions to the classroom portions remain to be erected.

In each case 750 children are to be accommodated. The classroom division is centrally located, with physical culture on one side and the auditorium on the other. The power plant in each case is complete, except as to a future boiler and is shown by the photographs.

In the classroom division are rooms for academic subjects and courses. In the shops are numerous facilities—lathes, benches, etc., etc., a few only of each kind, to make possible the preliminary training of each pupil as a separate unit, not as members of larger class units, such as is better done in later years in the senior high school.

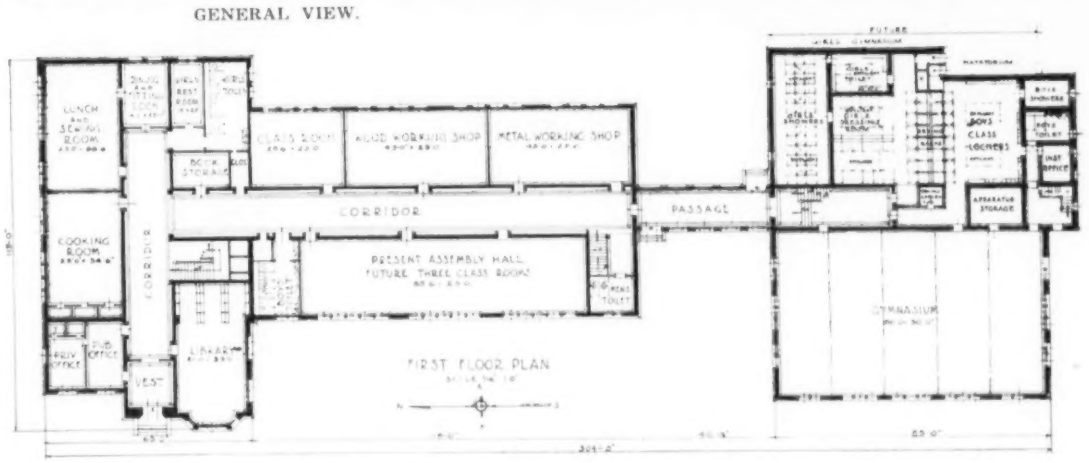
These school buildings, located in the outer portions of their communities, make a circle of junior high preparation all feeding to the senior high school in a central location.

POWER PLANT OF THE THOS. L. HANDY JUNIOR HIGH SCHOOL, BAY CITY, MICH.

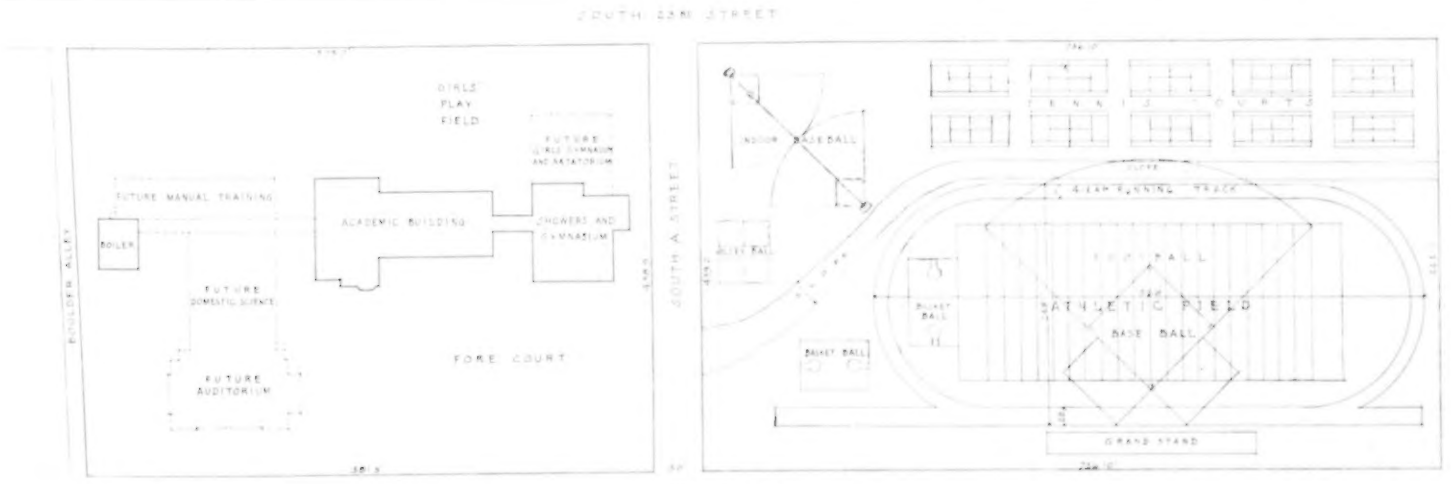
GENERAL VIEW.

JULIA E. TEST JUNIOR HIGH SCHOOL, RICHMOND, IND.

PERKINS, FELLOWS & HAMILTON, ARCHITECTS, CHICAGO, ILL.



JULIA E. TEST JUNIOR HIGH SCHOOL
RICHMOND INDIANA
PERKINS FELLOWS AND HAMILTON - ARCHITECTS



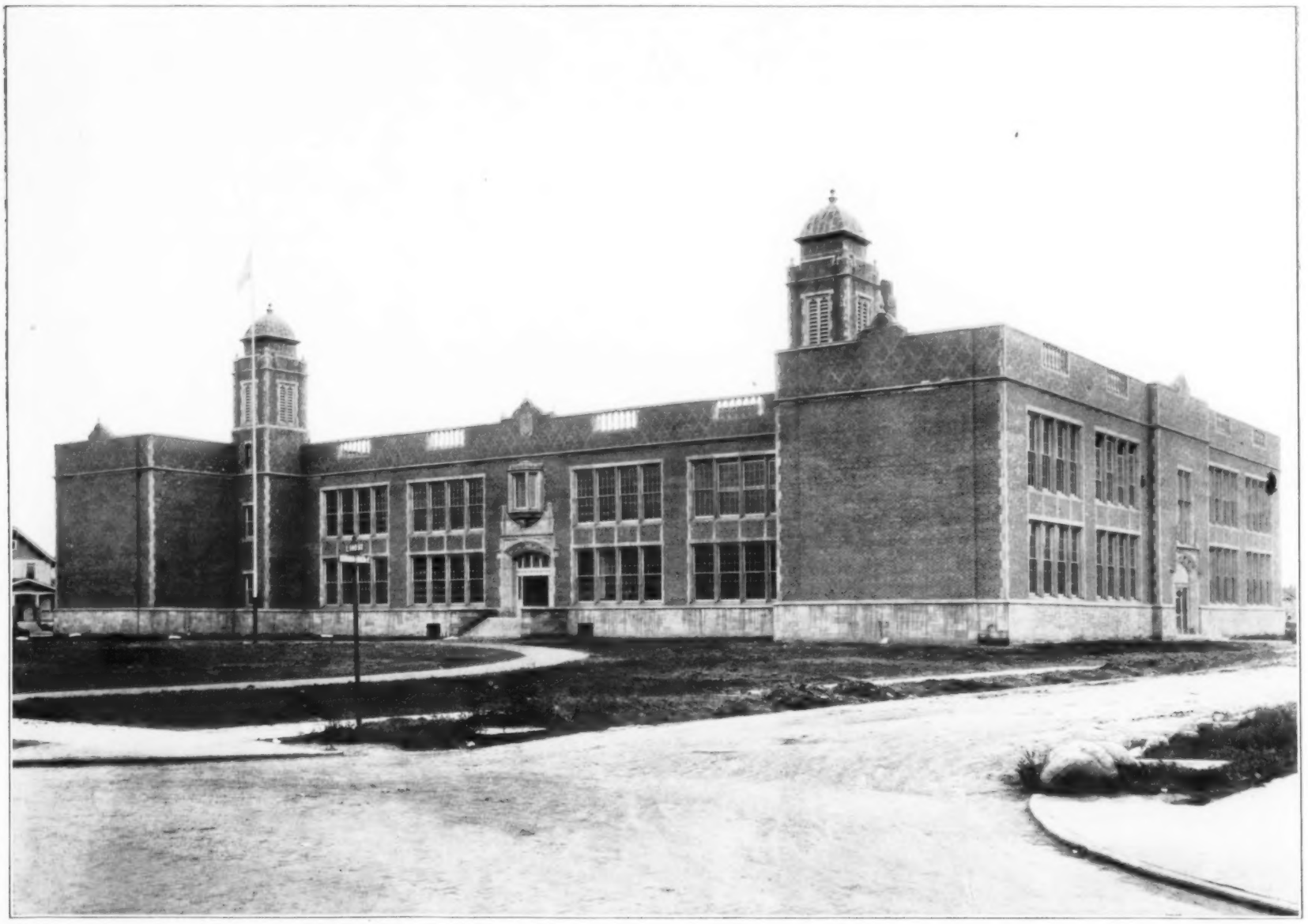
JULIA E TEST JUNIOR HIGH SCHOOL
RICHMOND INDIANA.
PERKINS FELLOWS AND HAMILTON — ARCHITECTS

PLAT PLAN

JOHN ADAMS SCHOOL, CLEVELAND, OHIO.

Situated on a site of 13 acres. Fireproof structure of brick and reinforced concrete with stone trimming. Three-story building with basement. The activities provided are as follows: Basement. Boys' gymnasium 65' 0" x 75' 0", girls' gymnasium 56' 0" x 75' 0"; lunch rooms and kitchen; boys' and girls' shower and locker rooms; automobile shop, 50' 0" x 130' 0".

WM. R. McCORNACK, ARCHITECT FOR THE BOARD OF EDUCATION



LONGFELLOW SCHOOL, CLEVELAND, OHIO.

A fireproof building of brick and reinforced concrete with stone trimmings. Two story without basement. First floor: Contains an auditorium to accommodate 350 persons provided with stage, dressing rooms and moving picture booth, a double kindergarten, standard classrooms, administration offices, dispensary and rest rooms. Immediately in the rear of the auditorium is the heating plant. Second floor: Contains 12 standard classrooms, teachers' lunch room, and large playroom over the auditorium, various toilet and supply rooms. Total cost of operation, $473,113.00.

WM. R. McCORNACK, ARCHITECT FOR THE BOARD OF EDUCATION

Let the Architect Beware!

By a School Architect.[1]

I

Our friend Allen, who aspired to be a school architect, was very bitter that night. Returning from a school board meeting, he had stepped in to smoke a pipe with us on the veranda. Minton, another fellow-achitect, was there, making three of us to swap professional experiences and talk shop. Sensing Allen's mood, I dropped the remark that school jobs were not all they were cracked up to be.

That started some hours of serious talk. Minton had done considerable school work in distant places, I had acquired some experience in it myself, and the lessons Allen had learned with our own school board seemed to be quite extensive and, in some respects, painful. Between us, with our first-hand knowledge and hearsay, we talked over dozens of untoward situations in which we and our brother architects had found ourselves in executing school work and in dealing with school boards. I am going to piece some of these situations and experiences together now, and weave them into a story about our friend Allen. They ought to make a fairly instructive tale, especially to architects who may be undertaking school jobs for the first time.

To begin with, we might as well share some of the observations that Allen and the rest of us had made concerning the diverse natures and habits of mind which control the average architect, and the average school board.

As to architects, let us exclude at once the venal, careless, or even crooked practitioner who "gets by" simply because the controlling members of the board are on his own low levels in motives, morals, or intelligence. He is generally a good business person, and lets no purely esthetic or professional interest come between him and his profits. Whether or not such persons are in the minority among professed school architects, as we prefer to believe they are, we refused flatly to consider them as real architects or professional men in our discussion. No, architecture is an art, grounded in the science of building, and the practice of architecture is a profession; and no man can be called an architect who lacks the instincts of the professional man.

What are these instincts that should distinguish the architect as a professional man? I like to think it is not merely the white collar and clean hands of the various professional callings that attract our high school and college boys, but rather the challenge to service through special ability and high skill. Be that as it may, a professional man is one who professes that special ability and skill, and who invites opportunities of personal service thereby and expects to be remunerated personally in proportion to his service. Do not miss the point that his service is direct and personal, for this distinguishes him from the business man, and—if one may say it—personal contact subjects his attitude and dealings to a gentler and finer standard than is current in the "strictly business" world. This is peculiarly the case with the architect, whose profession it is to refine and beautify with art, and perfect with science, the varied shelters of our lives and occupations. And when, as in school work, there comes the privilege of bringing this art and science to the service of children, and through them to society and the home-land, the attitude of the architect may well be one of sincere devotion, in which considerations of the main chance are merely secondary or entirely in the background. Not that the architect may be ignorant of the business of building, or ignore his personal business relations—but that his main thought is centered upon the creation for which alone these exist.

In a general way, these were the instincts and ideals of our friend Allen. It would hardly be correct to call him an average architect. He was typical, rather, of the conscientious, capable men who both respect and dignify the architect's profession and support its high reputation. He was such an architect as any school board should be proud and happy to deal with.

Our own school board, his client at the time, was also, I think, a finer group of people than the average school board. In make-up such boards are of course much alike, while they differ materially in education and capacity. In these respects a school board tends to seek the level of the community it serves, which is perhaps as it should be. Not that the board is always actually selected, or its members even nominated, by the community. Nearly every member of our board, for example, had been selected by his own fellow members or predecessors to serve the uncompleted term of some departed member, and thereafter, as incumbent, stood in the way of independent nominations and received the usual handful of perfunctory or complimentary votes at school elections. This is certainly not as it should be, since it tends to suppress independence and initiative on the part of new members, in whom just that sort of value would be expected. But the practice does promote harmony, which has its own unique value in a school board.

At any rate, our board was an exceptional one, representing an exceptional community. For ours was a college town, small enough to be marked with the personality of the college, with educational interests predominant, remarkably homogeneous, socially minded, democratic. So, to begin with, there was always a professor or two on our school board, although, by some strange irony, no professor of education was ever called upon to serve. Then there was usually a professional man on the board—a lawyer, or a doctor, or a minister, for example, and a woman member, presumably to represent the Parent-Teacher Association. Finally, and no board would seem complete without them, there was always a hard-headed or hard-boiled business man or two, according to the distribution of the other occupations.

Now, far be it from me to appraise the varied capacities of these members, or their contributions to public education in our community. All I know is, they were all above reproach as individuals and they were all sacrificing their personal interests to some extent, while gratifying a legitimate pride, in serving on the board. You would enjoy their friendly acquaintance, find them delightful in every social relation, impeccable in conduct, apparently devout in religion. You would deal with them financially without reserve, except perhaps in the case of the hard-headed business men, with whom a certain circumspection would always be expected, and in order. In short, they formed, as individuals, a model board of education; yet collectively, as a board, their reaction upon Allen, their chosen school architect, was in many ways peculiar and difficult to understand. And it is this kind of reaction that we as school architects must come to understand.

The attitude of the board, from the beginning, was not particularly complimentary or encouraging. The members considered that they were conferring a great favor on Allen in employing him to design the new school. True, he had done several odd jobs for the board, he had advised them freely and skilfully when they asked for advice, and although he did not tout himself as a school specialist he was exceedingly well informed and well equipped for the work. But the board was not qualified to judge of his special ability in this direction, and regarded his employment merely as a concession to home talent. He was patronized, in a way, where others less worthy than he would have compelled due respect and received more consideration.

Another handicap was that Allen had no relative or close friend on the board. In the absence of other advantages this is most important. I remember one school job at a village which was at some distance from the cities where we architects have our offices, and about fifteen of us had made known our willingness to be employed. In fact, we were all more than willing, we were anxious, for business had been very poor indeed that season. In this state of suspense each one of us received on the same day, *collect*, a telegram from the village board, requesting his presence on the following morning. Each one of us rejoiced, therefore, that his peculiar gifts had been recognized, that he had been chosen for the job! The disillusionment began when various architects met each other unexpectedly on early trains the next morning, and came to a climax when the whole company of anxious candidates met with the board. The county superintendent was there, too, with an architect friend, and he got the job.

I recall another case in which the board was a highly educated and sophisticated one, about to erect an important high school. The president of the board was a very precise, mathematical person who, after obvious eliminations had been made, carefully scheduled the qualifications of the remaining architects who were being considered on a series of elaborate score cards. He was very proud of those score cards, and wrote articles about them; and the building certainly justified the selection made by their help. But some years later, the building had to be enlarged, and in the meantime our precise board president had acquired a young son-in-law who had just graduated as an architect. This job was important, too, but somehow the score cards were overlooked, and son-in-law got the job.

As I was saying, Allen was being rather patronized by the board, and they naturally expected him to make all the necessary sketches without pay unless and until the bonds were voted. Other good architects were doing the same thing, then, and the voting of the bonds was practically a sure thing. So Allen consented to stand all the preliminary expense, provided only that if the bonds carried, the board would execute the regular American-Institute-of-Architects contract with him for the entire work. This contract would automatically take care of his compensation for the sketches, as well as for the remainder of the work. The board agreed to this and promised to hold the bond election as soon as the sketches were finished. This was all in writing, and it looked simple and safe enough, just as it does now.

So Allen went happily to work on the

[1]The present paper has been prepared by a western architect of wide practice in school building work. He has drawn on numerous personal experiences with school boards and for the balance has woven into his narrative actual occurrences in the experience of other architects with whom he has had direct contact.

The story is written without any intention of criticizing any individual or any school board, but to point out unmistakably the pitfalls of a schoolhouse construction project and the right relations which the architect and the members of the school board should demand.—The Editor.

sketches, having first got the board to approve a program of requirements as to classrooms, assembly hall, etc. But no sooner were Allen's ideas crystallized in a good scheme of plan than some residents living near the proposed site began to protest, and wanted the school located across the road. The situation got quite hot, there was much said on both sides, and the upshot was a special election in which the board was worsted and the change had to be made.

Now, the new lot was larger than the old one, which was an improvement, but it was irregular on every side and angle, faced in a different direction, and was dotted with a lot of fine trees, as many as possible of which had to be preserved. So the first sketches had to be entirely scrapped, and Allen started all over again, but about as enthusiastically as ever because of the wider possibilities and greater interest of the new problem. By and by Allen showed me the plan schemes he had invented for the new site, and asked me for suggestions. There was a considerable variety of them, and he had slighted nothing to find the best. He had spent a lot of time and money in studying out and making these sketches, too; but the job was a fairly large one, and he felt not only that he could afford to be liberal with expenses, but that it was his duty to do so. That seemed quite safe and proper, too. And it surely would have been under ordinary circumstances. For the board appeared to be much pleased with his sketch plans and perspective views, and everything appeared to be ready for action. But shortly after that time various other and quite unexpected things began to happen, for which Allen was quite unprepared.

It is too early now to moralize upon Allen's experience, but the experienced architect will discern several of his first mistakes. His dealing was lacking in business skill. He should have had his preliminary agreement with the board in writing, or should have obtained a copy of their resolutions covering his employment, and he should have submitted the whole matter to his attorney to determine whether the board was acting within its legal powers. His main thought was service, and he paid too little attention to compensation, which alone makes service possible. And he should have improved his personal contact with the members of the board.

II

Allen had now finished his preliminary plans for the second school site, after having spent considerable time and money on the job, and was looking to the board to call the bond election as promised, and execute the formal agreement with him in case the bonds were voted. Then it was that the unexpected began to happen. First and worst, the president of the board, who was a very fine, progressive man, and the moving spirit in the building program, died. Then a woman member, who was not only progressive, but had a fine mind of her own and used it, moved away from town. These losses did not seem to affect the building policies of the board, or weaken it beyond repair, but further events showed clearly that a change had taken place. Allen's approximate estimates having been approved, the board plainly lacked the progressive spirit of these departed members and was in grave doubt how to proceed. The bond market was unfavorable, and building prices were high. So the board "passed the buck" to a committee of citizens which was called into conference—business men, bankers, and others—to determine whether the board should go ahead with its building program or not. The need for new schools was just as urgent as ever, and after full discussion the vote was unanimous that the board should not wait for more favorable conditions, but call for a bond election. Full support was pledged to insure success. This was quite reassuring to architect Allen.

But, by this time the schools were about to close for the summer, and some of the board were getting ready to depart for their own outings. Besides, some of the timid ones felt that the school children would also be helpful in the bond campaign. At all events, the bond election was not called, but was postponed until after the summer vacation.

Another thing happened shortly afterward, which did not seem so serious at the time. The superintendent of schools had got in wrong with some of the teachers, and to restore harmony he had to go. Now this superintendent had done most to formulate the program for the building, aside from Allen himself, and he was the only one remaining who really understood and appreciated it. So his removal and the postponement of the bond election left Allen in a bad way. Allen had put a lot of money into the job of working out a plan to fit this building program, while its real sponsors and backers were all passing from the scene.

By this time Allen was in real need of a payment upon his preliminary plans. They had been finished long since, while the board had not fulfilled its part of the agreement by holding the bond election, and several months of inaction were ahead. So with the approval of the president of the board, he sent the board a statement on account. This new leader thought Allen's claim was proper and should be paid, but he didn't further any action upon it and shortly afterward, he, too, went away and resigned. The other members of the board followed his example by doing nothing, and so the summer went by with Allen still "holding the bag."

When the board met again in the fall, it had, as we see, three new members and a new superintendent of schools. It was an interesting group and will bear looking over for a moment to notice the changes that had taken place. When Allen started the job the two "strong" members were professional men, both with pronounced ethical natures and very high social ideals. Now the two strong men of the board were "hard-boiled," aggressive, opinionated business men, to whom business was strictly business, and the devil take the hindmost. There were still two professional men and a fine woman member, but they were inclined to be over-impressed, as one would expect, by the financial power and presumption of the others. At any rate, they were consistently passive and submissive, while the business men were positive and dominating; and so their counsel prevailed and harmony was thus preserved. This may be a prejudiced account, for I got it, partly, from Allen. Allen told me, too, that the new superintendent of schools sized up the board members just as he did, paid proper deference to the financial powers and acted in general with due reference to the continuance of his job. But this man was, in most business matters, merely the servant of the board.

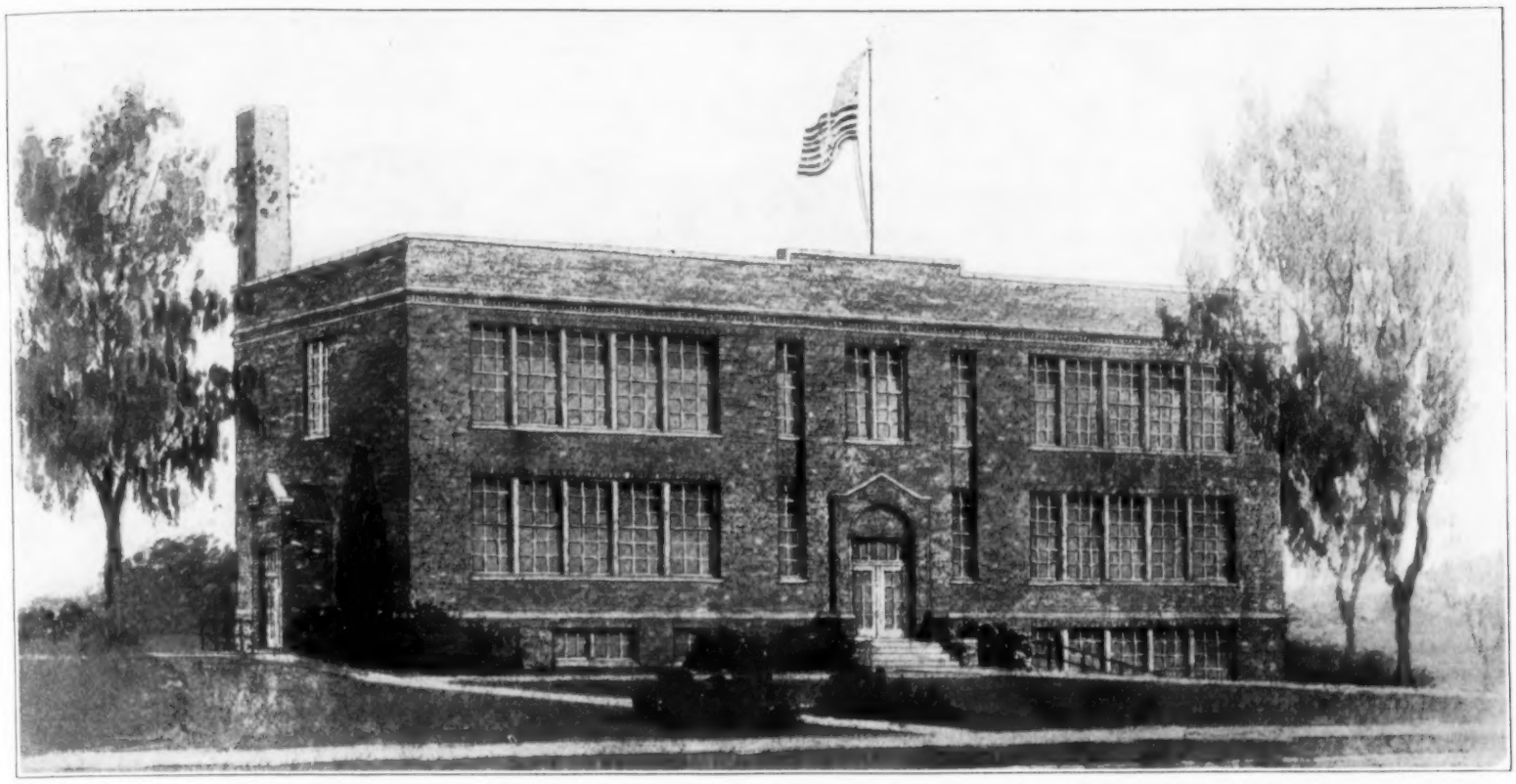
Now, although the board had still two holdover members, its view of the schoolhouse situation was entirely different in October from what it had been in June, and also its attitude toward Allen. Allen had got tired of "holding the bag," in other words of waiting for a bond election or for compensation for his preliminary work, and had reminded the board of the obligations which it had assumed. Such a reminder rarely pleases anybody, and this one did not endear Allen to the new powers of the board. They were business men, and in a strictly business spirit they told him where he stood. The "old" board, as they called it, had not promised a bond election at any particular time, nor for any particular amount, and he, Allen, was simply out of luck. When Allen pointed out that the board had actually done just those things, so far as his work was concerned, they rejoined that the "old" board had no legal power to make such an agreement, anyway, because it might, or might not seem wise to carry it out when the time came; that the agreement, if made, had been illegal and was therefore entirely void. That is to say, this "new" board felt it did not owe Allen anything at all for the work he had already done, that it might, or might not hire him for such work as would be done, and that if he were employed, the board need not be bound to any such form of contract as Allen had originally proposed.

As this tale abounds in morals, obvious and otherwise, we may as well point out a few as we go along. Here was Allen, somewhat richer in experience, of course, but poorer by a lot of wasted and unappreciated effort and by a large sum of money in cold cash, and apparently not a leg to stand on. True, he had a first-rate moral claim against the board, but the board did not acknowledge that, nor was it governed by moral considerations, anyway; it was "strictly business" and was governed only by the law. Not that the law compelled the board to treat Allen in that way—he could have been paid, legally, for the services the board had requested and he had faithfully performed—but that the law, as they saw it, permitted the board to turn him down, as it chose to do, and did.

Now this severe application of law to Allen's case was not due entirely to cussedness on the part of the board; it was due very largely to a misconception for which Allen, as a member of our honorable profession, was himself partly to blame. His first mistake had been to agree to render valuable services without adequate and certain compensation. It may be said in his behalf that other architects of high skill and excellent reputation were doing this frequently in the preliminaries of school work, and were perhaps compelled to do so by the usage established by other members of the profession. The "new" board was familiar with this usage, and told Allen that they could have got any number of sketch plans and perspective views of the new school by simply letting it be known that they were in a receptive mood. The members, like many others, had got the notion that an architect's preliminary studies are of no special value and that they need not be paid for unless the client likes them and the building goes ahead. They overlook the fact that if such preliminary work is conscientiously and thoroughly done, it is at least on a par with the preliminary work of other professions, and is worth at least the partial charge recommended by the American Institute of Architects.

Nevertheless, Allen was learning some useful facts about school boards. He found that he was not dealing merely with an amiable group of clients, but that his client was the school district, a municipal corporation, governed by State school laws, of which the board members were impersonal directors, with responsibilities under that law which they interpreted according to their various habits of mind. Where he was concerned, he found that the board reflected, not the gentle spirit of the community which they represented, but the grudging spirit of the unwilling taxpayer; while at the same time, as we shall see later, they could be extraordinarily generous with the taxpayers' money where personal inclination is directed. He was learning, but not quickly enough, that a good lawyer is indispensable to an architect in time of trouble, and above all should be consulted early enough to keep him out of trouble. But at this time Allen did not want to employ an attorney for fear of antagonizing the board. This was probably the one act which would have commanded their respect.

(To be Continued)



GRADE SCHOOL, LAKE PARK, MINN. Sund & Dunham, Architects, Minneapolis, Minn.

Lower Construction Costs

Samuel A. Challman, State Inspector of School Buildings for Minnesota

Going back for purposes of comparison to 1914, we find that the last ten years have given us some rather surprising experiences in the matter of building costs. During the first six years of the decade prices kept advancing at a more or less rapid rate, until we found that in the early part of 1920 costs of new buildings had trebled. During the two years following, prices came down rather precipitously, and in the spring of 1922 contracts for new buildings were being let for about 60 per cent over and above the cost in 1914. This has been followed by slowly advancing prices, until at the present time new school buildings are being erected for approximately 70 per cent over the prevailing costs in 1914. There will naturally be some variations from these rather general statements, owing to the selection of materials, cost of labor, transportation and other items, but, roughly speaking, they reflect in a fairly accurate manner the general situation.

Measured by its purchasing power, the actual value of the dollar as compared with 1914 was in 1920 only about 33 1/3 cents. In 1922 it had increased in value, until it was worth about 62½ cents. At the present time the value appears to be a trifle below 60 cents. In other words, a school building erected in 1914 at a cost of $35,000 would, if erected in 1920, have cost about $105,000, while if built in 1922, it could have been completed for approximately $56,000. If erected at the present time, the cost would likely be in the neighborhood of $60,000.

Elementary Grade School Building

An interesting concrete illustration, verifying in part the computations given above, has just been furnished by Lake Park, Minn. On July 27, 1920, the school board opened bids for the construction of a new elementary grade school building, 92 feet by 61 feet, three stories high, providing eight grade rooms with a total seating capacity of 300 pupils, a gymnasium-auditorium with a floor area of 3,074 square feet, and such other rooms as are usually incorporated in modern school buildings. From the perspective of the building it may be seen that the site slopes so that one end of the gymnasium-auditorium floor is only a few feet below grade. The floor plans indicate clearly such other features as may warrant consideration. The building is non-fireproof, with walls of brick and tile, tile coping, stud partitions, wood joist floors except in corridors, and wood roof with composition covering.

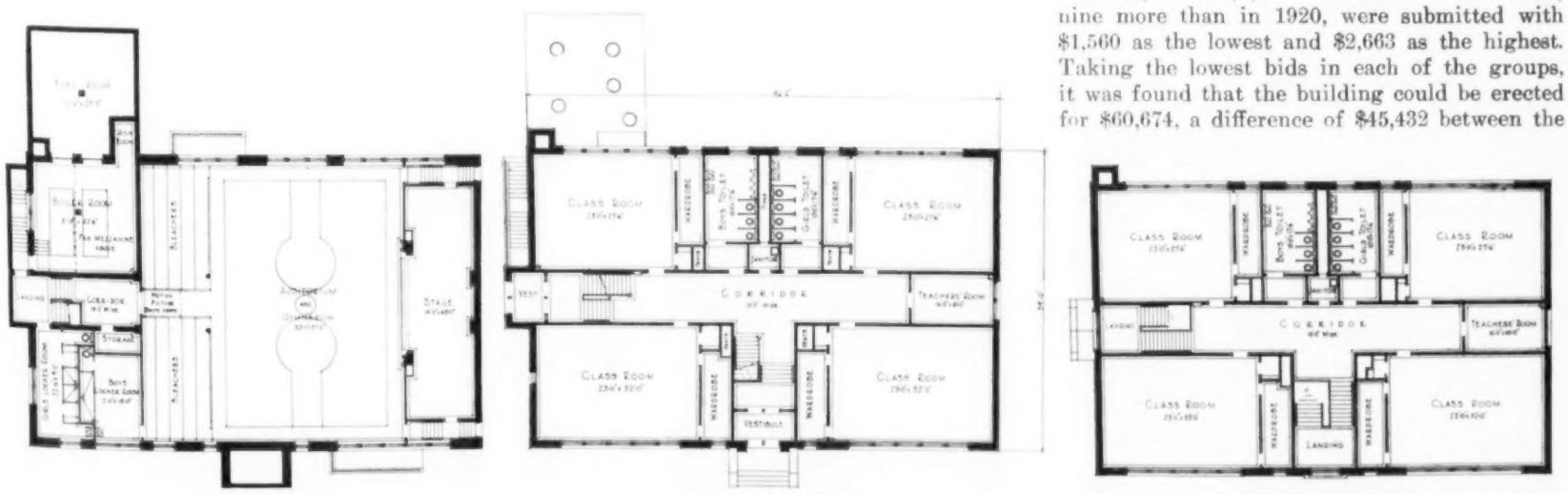
Bids in 1920

Eight general construction bids were submitted, varying from $77,950 to $91,500. Five bids on heating and ventilating ranged from $17,970 to $20,216. Three bids on plumbing and some sewer work ran from $7,310 to $8,300. Three electrical bids showed a variation of from $2,876 to $3,208. Adding the lowest bids in each of the four groups, the total cost of the building and the mechanical equipment would have been $106,106.

The school board, however, had only $70,000 with which to construct and equip the building and, under the circumstances, it deemed it advisable to reject all bids and defer construction of the building.

Bids in 1924

The project slumbered for four years. The old plans were then brought out and bids from contractors called for on October 2, 1924. Fourteen general construction bids, six more than in 1920, were received. The lowest was $44,019, the highest $51,900. Fifteen bids on heating and ventilation, ten more than in 1920, were presented. The lowest was $10,975, the highest $12,130. The bids for plumbing also numbered fifteen, twelve more than in 1920, and ranged from $4,120 to $6,848. Twelve electrical bids, nine more than in 1920, were submitted with $1,560 as the lowest and $2,663 as the highest. Taking the lowest bids in each of the groups, it was found that the building could be erected for $60,674, a difference of $45,432 between the



BASEMENT PLAN. FIRST FLOOR PLAN. SECOND FLOOR PLAN.

GRADE SCHOOL, LAKE PARK, MINN. Sund & Dunham, Architects, Minneapolis, Minn.

low bids of 1920 and of 1924. The contracts were awarded to the lowest bidders.

Saving Forty-three Per Cent

Comparing the low bids a little more minutely, we find that on general construction the school board saved 45 per cent, on heating and ventilation 39 per cent, on plumbing 44 per cent, and on the electrical contract 46 per cent. On the building as a whole the saving amounts to 43 per cent.

Cost per Cubic Foot

Computing the cubical contents in accordance with the rule laid down by the State Board of Education, which is identical with the rule of the American Institute of Architects, the building has 288,060 cubic feet. Had the contract been let in 1920 to the lowest bidders, the cost per cubic foot would have been 36.8 cents. By letting the contract on October 2, 1924, the cost per cubic foot is only 21 cents.

A Fireproof Building

Another interesting illustration of lower construction costs was furnished on October 10, 1924, when the board of education of the city of Minneapolis opened bids on the proposed Washburn high school. This building is fireproof, of concrete skeleton construction, three stories high, and has a capacity of 1,200 high school pupils. It has an auditorium with a seating capacity of 1,454; a lunch room which will accommodate at one time 610; two gymnasiums, each with a floor area of 3,840 square feet; industrial-arts rooms for courses in printing, sheet metal work, electricity, woodworking, and mechanical drawing; home economics rooms for cooking, serving, and sewing; rooms for music and freehand drawing; laboratories for botany, physics, and chemistry; commercial rooms for shorthand and typewriting; 33 classrooms for regular academic work; a school library with a floor area of 1,600 square feet, and a public library with a floor area of 511 square feet.

Cost of High School Building

Contracts for the completed building were awarded on the date given for a total amount of $629,040. The table which follows enumerates the various kinds of contracts, the number of bids submitted, the amounts of the highest and the lowest bids and the percentage which the lowest bid was of the total cost of the building.

The cubical contents of this building total 2,953,419 cubic feet. The various features of the building have been carefully worked out both in plans and specifications, thus reducing the likelihood of any appreciable amount for extras. The unit cost per cubic foot on the contracts is, therefore, not likely to differ from the unit cost on the actual amount paid for the building. This cost is found to be the surprisingly low sum of 21.3 cents. It is expected that the building will be ready for occupancy Sept. 1, 1925.

Tabulation of Bids on Washburn High School

Kind	No.	Highest	Lowest	Percentage
General	17	$535,000	$436,500	.6939
Reenforcing Steel	7	29,100	24,703	.0393
Heating	7	61,750	51,250	.0814
Plumbing	7	44,600	32,959	.0524
Electrical	10	48,900	40,240	.0639
Pipe Covering	5	7,196	5,343	.0085
Sheet Metal	6	20,320	16,309	.0259
Temperature Control	4	13,800	8,375	.0133
Elevators	3	3,175	2,880	.0046
Miscellaneous			10,481	.0166

Too often, after a period of high prices, the impression remains that no appreciable reduction has taken place. The two illustrations given, while not conclusive as to the extent of the reduction that has actually taken place, nevertheless point toward a substantial decrease of building costs after 1920. Where new school building projects are under consideration, the data here given will prove valuable, even if only used for purposes of comparison.

Building Surveys and Building Measurement

J. C. Almack, Stanford University, California.

The school survey movement is comparatively new. Only a little over a dozen years have elapsed since the first survey was made. It is a movement that has made rapid strides. Scores of surveys have been made the past decade. It is the unusual year that does not add its quota of ten to twenty reports of educational conditions in cities, counties, and states.

Although survey technique has not changed a great deal since Cubberley set the pattern in the Portland survey, some tendencies may be distinguished. One of these is the continuous survey. Thus, instead of an occasional examination by outside experts, the school authorities are carrying on scientific investigations of school progress and procedure all the time. The survey by the outsider has not apparently become less frequent as a consequence, but his methods have been mastered by the superintendent and his assistants, who apply them persistently to collecting information on the schools.

There is a second tendency for surveys to become somewhat specialized. It is a big undertaking to inspect and evaluate all the minutiae of school activity. There is, moreover, a marked advantage in working on one problem at a time. It permits of concentration. The issue is not so likely to be confused and action based upon survey results in more likely to follow. It makes it possible to select from the many problems the one whose solution is most pressing. When outside help is used the school authorities may bring in the person or persons who are best informed and best skilled in the special method of the particular undertaking. Thus we have instructional surveys, administrative surveys, and building surveys, etc.

A third survey requirement may also be mentioned: It is to the effect that surveys must be diagnostic. In other words, they must not only show where the weakness is, but they must reveal ways and means by which improvement may be made. Inasmuch as changes almost always involve the expenditure of money, frequently in considerable amounts, there has also been a demand for reliability in results. School administrators have not been satisfied to accept opinion. They have wanted to know that judgments have been arrived at through the employment of objective measuring devices. The more reliable the measuring instruments, the better satisfying the survey staffs have been.

Of the various types of specialized surveys which are possible, the building survey has been most frequent. This has been due to several reasons. In the first place, the building problem is quite a distinctive one. It is quite conspicuous. School authorities may disguise from the passerby the deficiencies in spelling ability among the pupils, but they cannot conceal inferior school buildings. Second, the communities have been expanding their buildings to accommodate the constantly increasing number of pupils who have been asking entrance. During the war, building was at a standstill. At its close, not only must schools compensate for neglect, but they must get ready to care for the growing attendance. In the third place, building outlays represent enormous sums to be laid down in a lump. The responsible parties have been concerned to see that the wisest and most economical use possible is made of the public funds.

One of the most important reasons is to the effect that the significance of the building in shaping and determining school policies has come to be understood. Intelligent schoolmen have come to realize that the school building is something more than a structure whose "essential purpose is to protect teachers and pupils from sun, wind, and weather," as was stated in a recent editorial in a popular weekly magazine. There are plenty of buildings which could do this and yet be utterly unfitted to the demands of modern education. In other words, the school building makes the school to a considerable extent.

Three types of building surveys may be identified. For convenience they will be arbitrarily classified as (1) the descriptive, (2) the score card, and (3) the organizational. A good example of the first type is found in the work of Dresslar in Washington City and his survey of buildings constructed from the Rosenwald fund in the southern states. Up to six years ago it was the method chiefly used in general surveys. It has a certain common sense appeal that is satisfying, but does not lend itself to the handling of detail, and to comparison. It is not reliable, and the diagnostic value is almost nil.

The score card method came in as a result of the work of Strayer and Engelhardt. It is far more convenient than the descriptive method. It embodies a form of statistical procedure. The whole technique has probably been best developed by Hart in California. In the form which he has used, the survey is comprehensive and includes the elements of importance that are related to building planning and utilization. The most serious objection to the method is found in the failure to separate the score card items from the inventory items. On this account one cannot be sure of the reliability of the survey, neither does one know how reliable it is.

The organizational method is that which has of late years been employed by the United States Bureau of Education. The surveys of Gloucester, Athens, and Portland may be cited as examples, all the work of Fernandez. They are called organizational because special consideration is given to fitting the buildings to the school needs, and to planning in line with the abilities of the districts to provide facilities. This is a strong point. The most serious criticism that can be addressed against the method, is that all the surveys have eventuated in the endorsement of the work-study-play plan of organization. The unvarying character of the recommendations causes one to view the surveys with suspicion as scientific products and further to wonder if they are wholly free from propaganda.

We have for some time at Stanford University been working on the problem of school building measurement. Certain fundamental considerations involving measurement were presented in the School Board Journal of June, 1923, in an article entitled "An Introduction to School Building Measurement." Since the publication of that paper we have been endeavoring to perfect a measuring instrument in line with the fundamental principles as given, and at the same time in accord with practical working requirements of which the following stand out most prominently:

1. Must be usable by the superintendent and the teachers. This is in line with the tendency

that the survey must be made by the school staff and must be continuous.

2. Must have a known reliability which must equal standard devices used in measuring instruction.

3. Must be diagnostic. This means the results should throw light on the adequacy of present practices, indicate the remedial measures which should be adopted, and in the probable cost of the same.

4. Must treat the school building as an important factor in the educative process. This postulates especial emphasis upon the classroom.

5. Must specialize to the extent of separating the discreet elements from the graded. This necessitates both a measuring scale and an inventory sheet.

A description of the device as developed for city schools will suffice. It consists of four forms. Two apply to the building proper, and two to the classroom. Separate forms are used not only for convenience, but for economy. One may want to take an inventory of the plant without wanting to evaluate it. Moreover, as the classroom is the unit of instruction as well as of building efficiency, one will want to take account of them separately. In a city or state survey, the general building forms may be filled out by the principal. The classroom forms may be distributed to the teachers, each to be held responsible for her own room. By dividing the labor among many, a building survey becomes a much smaller task than when done by a few. On the other hand, if it is desired that the inventory be taken and the buildings evaluated by one person, the separate forms are very convenient for both marking and tabulation. The forms may be distinguished as follows:

1. An inventory and checking sheet for the school building. This lists 189 items.

2. A measuring scale for the school building. This includes 30 items.

3. An inventory and checking sheet for the classroom and for the special rooms. This lists 87 items.

4. A measuring scale for the classroom and special rooms. This lists 20 items.

Three types of facts are called for in the inventory sheet. They are number, kind, and size. It is obvious that not all are required for each item. In doors, for example, all three are rather important. In corridor floors, kind is the significant point. In addition to the check list items there are a number of incidental facts called for, such as the date the building was constructed, the original cost of construction, the number, cost, and date of additions, and the estimated future life.

The classroom inventory sheet is similar in form to the building inventory blank. It is designed to cover items that belong exclusively to the classroom, and which are in popular opinion at least related to instruction. The two cards supplement but do not duplicate each other.

Only one type of question is answered on the measuring scale. This is the question, "How good is the item being examined?" A five-point scale was accepted as conforming most closely to desirable practices, and numerical values standing for ranks or position rather than for absolute quantities were assigned. A simple card 4 by 6 inches is used for the classroom. The directions are placed on one side, called page 1, and the scale on the opposite called page 2. For example:

A Graded Scale for the Measurement of the Classroom

Page One

Directions for use: A scale for the measurement of the classroom and its equipment is found on the opposite side of this card. To use the scale put a check mark or a cross opposite the item you are grading, and in the column which tells the condition of the item. (See description below.) When the item is not found in the classroom at all put a circle around the number before it. If there are several articles of equipment or of construction which vary in the condition they are in, put numbers instead of check marks in the columns to show how many are of each degree of excellence.

The numbers which stand at the head of each column have the following meaning:

Five means that the item is in excellent condition; new, showing no marks from use, and undepreciated.

Four means that the item is in condition for effective use, but not wholly new. It shows sufficient wear to cause a depreciation from its cost price if offered for sale.

Three means that the item is in average condition. It shows wear and tear but can still be used without repairs.

Two means that the item has suffered from wear and tear, neglect, and age or all of these to such an extent as to seriously impair its usefulness. It is not suitable for use until repairs or additions are made.

One means that the item is worthless or at best has only scrap value. Out of date and worn out materials come under this heading. Such items should be replaced by new.

When all the items have been judged, multiply all the check marks in the first column by five, in the second by four, in the third by three, and so on. Omit any that have been marked with a circle. Compute the total in each column and add all the column totals together. Divide this number by the perfect score (five times the total number of items which you have checked). The quotient will give you the percentage which the classroom is of the best classroom.

Do not try to fill out the column under the head of estimated cost of repairs and replacements.

If any items have been omitted, which in your opinion should have been included, write them in and judge them as you have done the others.

Under the head of "Remarks" make any comments you can which will serve to describe conditions. Items marked in need of repair (under two) should be given special attention, and the nature of the needs shown as clearly as possible.

Page Two City..... School..... Classroom..... Date.....

Items	Condition 1	2	3	4	5	Estimated Cost	Remarks
I. Classroom Details							
1. Doors							
2. Locks							
3. Hinges							
4. Floor							
5. Walls							
6. Ceiling							
7. Windows							
8. Storage closets							
9. Cloakrooms							
Totals							
II. Equipment							
10. Pupils' desks							
11. Tables							
12. Teacher's chair							
13. Teacher's desk							
14. Visitors' chairs							
15. Bookcases							
16. Filing cabinets							
17. Blackboards							
18. Bulletin board							
19. Clock							
20. Thermometer							
Totals							
Grand totals							Final score

The matter of passing judgment upon the items is not a difficult or a complicated one. It first involves a decision as to what is usable and what is not. Assuming that an item falls in the class of non-usable, the next decision must be made concerning whether repairs are sufficient to put it into shape again, or whether replacement is necessitated. If the item is pronounced usable, a differentiation into new, good, and average is required. Here the only point that requires fine powers of discrimination is as to whether the item is good or whether it is average. For all practical purposes the category good might be dispensed with. However, as one checks over the building and furnishings from year to year, it is of value to know with some degree of certainty the rate at which depreciation is taking place. Moreover, with the estimated cost of repairs and replacement at hand, it is an easy matter to decide which is the more economical.

Particular value may be ascribed to the final score assigned to the classroom. We have assumed, and it is believed the assumption is sound, that there is a relationship between the kind and condition of the classroom and educational results. We should suspect that in a perfect classroom the attendance would be better, there would be fewer cases of sickness, the pupils would find more pleasure in school, and that more rapid progress would be made in the subjects. However, we have had no way by which this theory could be put to the test. If we should find that a high classroom score is associated with high scores in school products we would have the best type of evidence that good school buildings pay. It is believed that our method may be used to throw some light upon this subject.

The reliability of the scale was tested in the usual way by correlating values assigned the odd numbered items against the even numbered items. The limitations of the method as applied to a building measuring device are many. It assumes that depreciation on any two parts of a building go on at the same rate. It assumes that the condition of any articles of equipment was about the same when they were installed. Third, it assumed that precision of judgment does not vary from item to item. The last proposition is doubtless true. The other two are not true. Taking the first for illustration, we have data gathered from several hundred school buildings showing that unlike the wonderful "One Hoss Shay" every part is not built exactly as good as every other part, and furthermore every part is not cared for as well as every other part. This has the effect of making the scale seem less reliable than it really is. We may take it for granted, therefore, that the reliability coefficients are in reality not lower than the coefficients given.

The reliability was determined from materials drawn from two sources. First, a small group of principals, who had been trained in the use of the scale and had had practice in using it, graded twenty buildings and 150 classrooms. Second, an unselected group of principals without special training and practice graded 114 buildings. Another unselected group of teachers without training and practice graded 400 classrooms. It goes without saying that more satisfactory results are obtained when users of the instrument are familiar with it. Nevertheless, the reliability coefficients resulting were as follows:

1. Of the building scale.....	.876	.0084
2. Of the classroom scale.....	.858	.0042

The distribution of building and classroom grades gives an interesting picture of conditions. Using as illustrative figures taken from the Arizona State School Survey where the device was used we have results as follows:

	Very Inferior 50% and below	Inferior 51-50%	Average 51-80%	Good 81-90%	Excellent 91-100%
1. City buildings	2.5%	5.0%	37.5%	27.3%	27.7%
2. Rural buildings	5.5%	10.4%	52.7%	18.8%	7.6%

Interpreting results conservatively the recommendations concerning such findings would take the following direction:

1. Buildings in the very inferior group should be abandoned at once.

2. Buildings in the inferior group should be immediately overhauled or abandoned.

3. Buildings in the average group are in need of several repairs and replacements, as well as several additions in equipment.

4. Buildings in the good group need only a few minor repairs and additions to facilities and equipment.

5. Buildings in the excellent group are very satisfactory as they stand.

As another illustration of the results obtained from using the scale a few figures are given concerning the condition of a few classroom items. The data covers about four hundred rooms and for present convenience are expressed in percentages. An examination of the table will show something of the diagnostic value of such a form. We find:

Items	Should Be Replaced	Should Be Repaired	Average	Good	Excellent
Doors	0.4%	1.5%	11.3%	56.3%	30.5%
Floors	1.0%	1.5%	8.3%	68.0%	21.2%
Walls	1.6%	1.1%	10.4%	58.9%	28.0%
Ceilings	3.7%	3.6%	11.7%	52.0%	31.0%
Windows	0%	0.8%	14.5%	50.2%	34.5%
Storage closets	0%	2.9%	11.5%	53.8%	31.8%
Cloakrooms	0%	.6%	14.3%	53.1%	32.0%

The device has proved quite satisfactory in use. It is convenient, the results are easily tabulated, and the diagnosis is quickly made and is dependable within known limits. As one reexamines the objectives which were stated in an earlier paragraph he will undoubtedly conclude that at least some progress has been made toward their realization. It should be kept in mind that the method is in the preliminary stage, and except for one state survey has not been submitted to a real trial. With experiment and modification it is hoped to finally develop a measuring scale for school buildings that will be of genuine service in surveys, and in the practice of administration.

The Modern Trend in the Science of Ventilation

Perry West, Newark, N. J.

(Concluded from November)

Some Practical Standards of Ventilation

Turning back to the ten factors previously given under the theoretical standards of ventilation, it will be seen that these might be grouped as follows: Air supply and air distribution, which might be termed under one head, *effective air supply*.

Effective air supply would then represent the amount of air actually brought into proper relationship with the occupants of the ventilated space. It is said that an adult could exist indefinitely on the quantity of oxygen contained in five cubic feet of air supplied per hour if the lungs could extract all of this oxygen. The practical percentage of extraction is placed at 25 per cent so that twenty cubic feet of air per hour will sustain life. An adult at rest expires about 0.6 cubic feet of CO_2 per hour so that with twenty cubic feet supplied per hour the CO_2 content would be 300 parts in 10,000. This equals the 300 parts fixed by the Synthetic Air Chart for zero ventilation.

If a deduction of 0.3 per cent is allowed for each part of CO_2 in 10,000 and then is divided by the distribution percentage, we would get the deduction percentage for what might be termed the effective air supply column, covering both of these factors. For example, if the CO_2 test showed six parts above the outside air standard of four parts in 10,000, we would have according to the Synthetic Air Chart a deduction for CO_2 of 6 x 0.3, or 1.8 per cent. If for this condition the test showed a distribution of 50 per cent, we would have 1.8/50 per cent, or 3.6 per cent as the combined deduction for these two factors in the effective air supply column. This would be the same as would be gotten in the CO_2 column alone with half the air supply and perfect distribution, which is as it should be, as the usefulness of the air supply would be the same in either case. This would simplify the chart and put the measure of these two factors on a more scientific basis.

It has already been seen that air temperature, relative humidity, and air motion naturally combine under what has been termed effective temperature.

Remaining, then, are the following practical factors of ventilation, stated in the order of their importance:

1. Effective air supply.
2. Effective air temperature.
3. Air cleanliness.
4. Air sanitation.
5. Odors.
6. Other injurious substances.
7. Monotony.

Taking these as a basis and including the other suggestions made, the Synthetic Air Chart might be put into the following simplified and perhaps more usable form.

A further suggestion is that, since the percentages of deduction for the particular columns, or departments, representing effective temperature and effective air supply, are so nearly the same as the corresponding deductions to be carried over into the final percentage of perfection column, that these be made exactly the same, for the sake of simplicity and ease of use. Another suggestion is that a function on effective temperature distribution be added similar to that suggested for the effective air supply.

In the normally crowded city place of assemblage, the heat given off by the occupants, together with that given off by the lighting and power equipments, is usually more than the normal heat loss through the structure to the outside air, even in winter under cold climatic conditions. This means that, in order to preserve an equilibrium of effective temperature, the entering air must be cooler than the leaving air, so that the problem is usually one of cooling and ventilating rather than of heating and ventilating.

A typical case for winter might show about 300 B.t.u. of body heat plus 100 B.t.u. from light, etc., being given up to the building against 200 B.t.u. heat loss from the building, per person per hour. This would mean that 200 B.t.u. per person might be carried away by the air.

If the flow of air is upward, or from the side, so as to bring the incoming air into direct contact with the occupants, the temperature of the incoming air may not be more than five degrees below the temperature of the air leaving the occupant (for ceilings ten feet or less in height) otherwise the ventilation will be drafty and uncomfortable. This difference may be increased one degree for each two feet of added ceiling height, provided the rising air does not come into direct contact with another tier of occupants. For ten feet and lower ceilings, the quantity of air per person to dissipate this excess heat is 200/60 x 0.02 x 5=33 cubic feet per person per minute. This may be reduced somewhat on the assumption that the component of heat from lights is usually introduced near the ceiling and may be allowed to heat the outgoing air to a greater difference.

In the practical work of engineers who design ventilating systems and of architects and owners who have to pass upon these systems, the one item involving standards, which is the basis of all calculations and layouts, is the quantity of air to be handled by the system to be used, for producing the results desired. The functions of air handled in connection with ventilated spaces are, to supply the necessary oxygen for respiration, to keep the dilution of CO_2 and other objectionable substances down to the proper point, and to maintain the proper effective air temperature.

The air handled may consist entirely of air taken in from the outside, or it may consist partly of new air and partly of recirculated air.

On the basis that the air brought in from the outside is for oxygen supply and dilution only, the following cubic feet per minute per person would be required for the ventilation percentages shown, if all other factors are 100 per cent perfect.

In theaters, assembly rooms, auditoriums, and other places of public amusement and assemblage there are usually several other factors to consider, such as the removal of excess heat, excess moisture. dust raised by the movement of the occupants and odors.

Method of Using Modified Synthetic Air Chart

Percentage of Perfection	Cu Ft. of Air per Minute Required per Person at Rest	Cu. Ft. of Air per Minute Required per Person at Hard Work
98%	15.0	30.0
96%	7.5	15.0
94%	5.0	10.0
92%	3.75	7.5
90%	3.0	6.0

For 85 degrees outside air and 70 per cent relative humidity in the summer the effective temperature percentage of perfection would drop to 60 per cent without any change in the air from outside conditions. Assuming that the distribution was 85 per cent perfect the total deduction would be 40.80 per cent—50 per cent leaving a plus percentage of 50 per cent

[1]Prepared for the Semi-Annual Meeting of the American Society of Heating and Ventilating Engineers, Kansas City, Mo., June, 1924.

for this column. This corresponds to 45 per cent reduction in the final column, leaving 55 per cent perfection of ventilation for any amount of air supply, provided all other departments are 100 per cent.

Assuming that the air supply is 30 cubic feet per person and that the body heat and heat from equipment will raise this five degrees, also that the vapor added per person is ten grains per minute or 0.33 grains per cubic foot of air handled, the effective temperature difference will be raised about 2½ degrees so that the percentage of ventilation would drop about six per cent more, leaving 49 per cent ventilation. It will be seen, therefore, that we may not hope to get better than 40 per cent to 60 per cent ventilation in warm summer weather without some method of air cooling.

Air motion will assist, but unless increased beyond the usual ten to twenty feet per minute ordinarily obtained from the movement of the air through the room it will not improve the percentage of ventilation more than two to three per cent.

By the use of refrigerating and dehumidifying apparatus this effective temperature department can be maintained at any desired percentage of perfection. The use of a good air washer should reduce the temperature about 70 per cent of the difference between the wet and dry bulb temperature. This for the above case would reduce the effective temperature difference about two degrees, corresponding to an increase of five per cent in the final percentage of the ventilation.

It will be understood that the above is rather an extreme case of temperature and humidity and that the final percentage will be improved by the air washer in a greater proportion if the relative humidity of the outside air is lower.

For a condition of 80 degrees dry bulb and 50 per cent relative humidity, the percentage of the entering air would be 79 per cent, the percentage leaving the occupants would be 67.5 per cent and the air washer would improve this to 76 per cent.

Assuming that 90 per cent ventilation is desired for places of assemblage, that distribution will be 75 per cent, dust 96 per cent, bacteria 98 per cent, and odors 85 per cent, there will be a deduction of one per cent for dust plus one per cent for bacteria, plus 1.5 per cent for odors, making a total of 3.5 per cent and leaving a deduction of 6.5 per cent for effective temperature plus effective air supply.

Assuming that the effective temperature can be controlled in winter to within one degree above or below the comfort line there would be a deduction of 2½ per cent for this, leaving a deduction of four per cent for effective air supply. With 75 per cent distribution this would leave three per cent deduction for CO_2 corresponding to an air supply of ten cubic feet per minute per person.

For a summer condition of 80 degrees dry bulb and 65 per cent relative humidity without air cooling, the effective temperature percentage would drop to 74 per cent for the entering air and 52 per cent for the air leaving the occupants. This would be raised to 66 per cent with the air washer.

For 30 cubic feet per person per minute these percentages would change to 74 per cent for the entering air, 66 per cent for the air leaving the occupants and 76 per cent with air washers.

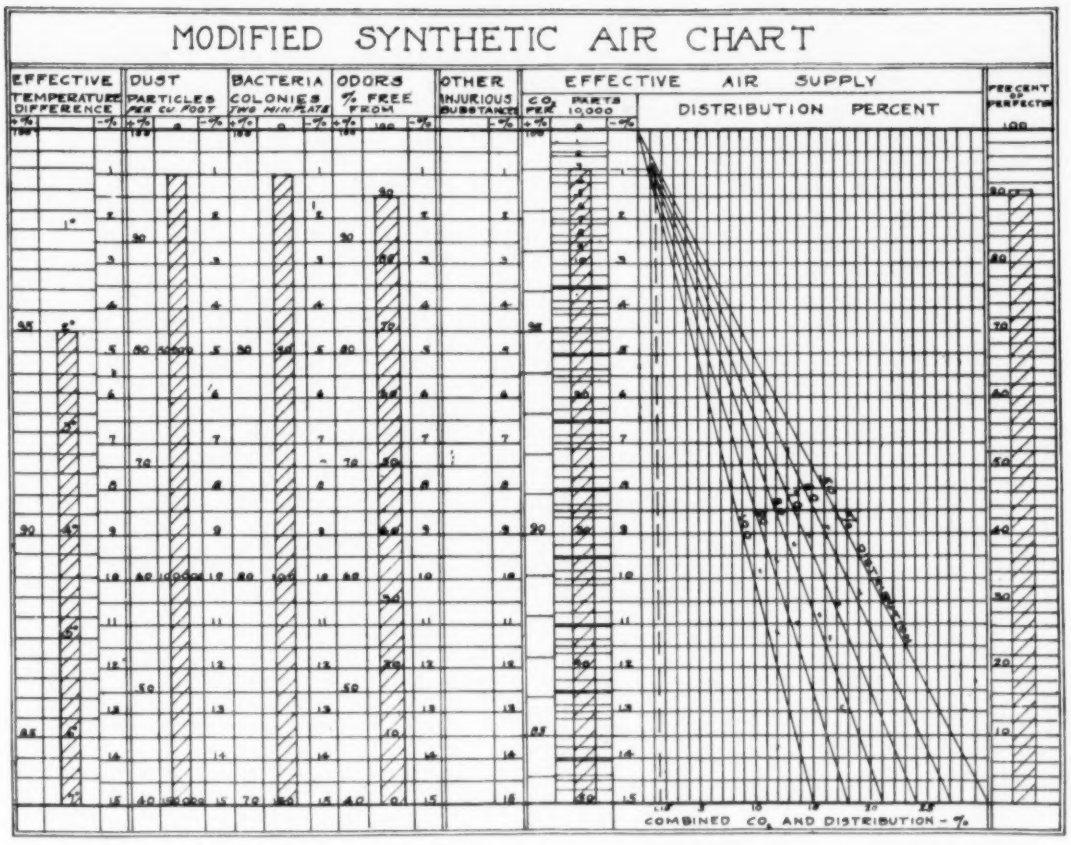
For 40 cubic feet per person per minute these values would change to 74 per cent, 67 and 80 per cent, and for 50 cubic feet per person to 74 per cent, 68 and 81 per cent.

It will be seen from this that ten cubic feet of air taken in from the outside, per person per minute, is sufficient for winter conditions but inadequate for summer climates, where heat and humidity are the determining factors, unless refrigeration is used. It should also be noted that increasing the air supply from 10 to 50 cubic feet per person per minute gives little improvement unless some form of artificial cooling is used.

It would seem, then, that about 75 per cent ventilation can be obtained under reasonably severe summer conditions with an air supply of 30 cubic feet per person, using an air washer, and that beyond this point there is little to be gained by increasing the supply. It should be noted that the above is based on upward ventilation and that the cooling effect of from five to ten degrees with air washers and of perhaps twice this amount with refrigeration will produce uncomfortable drafts on the occupants at times. For this reason and for the further reasons that it is more sanitary and more easily controlled, the downward system of ventilation is perhaps more efficacious in large and intensely used places of assemblage. On account of transporting all of the heat from lights downward and of forcing the body-heated air back over the occupants, it is usually necessary to do much more cooling of the air than can be done with the air washer without refrigeration.

On the other hand, the air is brought in high enough to permit of its being diffused and brought to the proper condition before coming into contact with the occupants. It can be seen, therefore, that the air supply per person per minute for assemblies could be ten cubic feet in winter, 30 cubic feet in summer with air washers and anywhere between these two figures for the entire year with refrigeration. Nothing better than about 75 per cent ventilation can be secured in hot, sultry summer weather without artificial cooling but with such cooling, especially if the air supply is taken from overhead and exhausted from below, almost any percentage of perfection can be maintained.

The foregoing does not take into consideration the matter of recirculation, but it can be readily seen that there is little to be gained by recirculation unless an appreciable amount of CO_2 and attendant impurities which are put into the air, can be taken out during recirculation. The handling of the larger quantity of air may be of value either to produce air mo-



Method of Using Modified Synthetic Air Chart

The accompanying chart represents the same conditions as shown on chart Fig. 1, corresponding to the following test data:

Dry bulb temperature	72 deg.
Wet bulb temperature	58 deg.
Air motion	20 ft. per min.
Physical state	Light work
Dust	10,000 particles in cu. ft.
Bacteria	10 colonies on min. plate
Odors	90 per cent free from
CO_2	7 parts per 10,000
Other injurious substances	None
Distribution	81.4

The values are plotted on the modified chart as follows: Referring to the Comfort Chart shown between pages 134-135 of the American Society of Heating and Ventilating Engineers' guide, 1923, it will be seen that a dry bulb temperature of 72 deg. with a wet bulb temperature of 58 degrees shows an effective temperature of 65.25 degrees. It will be seen by referring to Fig. 10 on page 180 of the February, 1924, Journal American Society of Heating and Ventilating Engineers that the air motion of 20 ft. per min. would reduce this effective temperature about 0.75 degrees. Assuming from previous data that the state of light work would reduce the comfort line 1½ degrees it would bring this to 62½ degrees instead of 64 degrees. This will leave an effective temperature difference of 2 degrees.

This corresponds to a deduction of five per cent for this particular column, leaving a plus percentage of 95 per cent. This five per cent deduction in the effective temperature column corresponds to a deduction of 4.5 per cent in the final percentage of perfection column.

The 10,000 particles of dust corresponds to 96 per cent in the plus column for this particular department and a minus one per cent to be deducted in the final percentage of perfection column.

The ten colonies of bacteria correspond to 98 per cent in the plus columns for this department and a minus one per cent to be deducted in the final percentage of perfection column.

The 90 per cent freedom from odors correspond to 94 per cent in this particular column and a deduction of 1.5 per cent for the final percentage of perfection column.

The seven parts of CO_2 (3 parts above the normal CO_2 contents of the outside air) correspond to a plus percentage of 99 per cent for this particular department and a deduction of 0.9 per cent in the minus column.

This 0.9 per cent is extended over to the diagonal line corresponding to 80 per cent distribution, and from the intersection of these two lines, a perpendicular is dropped to the line showing the combined minus per cent for CO_2 and distribution, which is found to be 1.15.

Adding these several deductions we have the following:

For effective temperature difference	minus 4.5%
For dust	minus 1%
For bacteria	minus 1%
For odors	minus 1.5%
For effective air supply	minus 1.15%
Total	9.15%

This deducted from 100 per cent leaves 90.85 per cent which is plotted in the final percentage of perfection column.

tion or for use as a better cooling medium with less temperature difference between incoming and outgoing air. Recirculation may also be used as a purely economic feature during the warming up of buildings or during periods when the space is only partly occupied and the mechanical arrangements are inadequate for properly varying the quantity of air handled to suit.

A good arrangement is to provide apparatus for handling 30 cubic feet of air per person per minute with provisions for recirculating any amount up to as much as two-thirds of this. The percentage of air recirculated may be varied to suit the seasonal change so as to conserve heat in winter and refrigeration in summer.

Where effective temperature is controlled, according to the usual method, from the dry bulb temperature in the room, there may be a wide variation in this effective temperature due to the varying amounts of moisture in the air, unless humidifying apparatus with accurate humidity control is employed.

Between the condition of absolute dry air at 70 per cent and absolutely saturated air at 70 degrees there is a difference of ten degrees in effective temperature which means an average difference of 25 per cent in the quality of ventilation. This may be taken to mean about ten per cent on each side of the neutral point for ordinary ventilating conditions so that the air washer and humidity should improve the ordinary ventilating plant another ten per cent on this count. Good filters will, of course, serve the same purpose for cleaning the air of suspended matter, and may improve the ventilation about ten per cent.

In schools where the requirements are not so severe and it is not necessary to provide for summer conditions, as much as 90 per cent of the air is being very successfully recirculated. The use of ozonation for eliminating odors and for otherwise refreshing the air is advisable wherever recirculation is regularly and intensively employed.

It should be noted in connection with our present means of measuring and comparing qualities of ventilation that we do not take into account any of the functions of the relative humidity of the air, except that bearing upon effective temperature. This means that air of any temperature and relative humidity, within proper physical range, i.e., below 64 degrees wet bulb, may be made to meet the comfort line by either heating or cooling without addition or deduction of moisure. Absolutely dry air may be heated or cooled to 78 degrees and be 100 per cent perfect so far as effective temperature is concerned and still be far from perfect as far as effects on the membranes of nose, throat, and lungs are concerned. Such dry air is also very conducive to the increase of dustiness in the atmosphere of a room from the standpoints of dryness and electro-static agitation. The air washer and humidifier correct these difficulties and there should be some definition of limits for the relative humidity in our measure of ventilation.

It is not unusual to find from one to two million particles of dust per cubic foot in the outside air surrounding city buildings; unless this is eliminated it will give dust counts in rooms equivalent to a deduction of from five to 20 per cent in the perfection of ventilation.

A good air washer should eliminate 80 to 90 per cent of the dust entering the intake and perhaps reduce the dust penalty in the rooms to less than one-half of the above figure. It will be seen, therefore, that air washing and humidification may improve the quality of ventilation about ten per cent in the effective temperature department, plus another ten per cent in the dust department, plus other improvements in the quality of ventilation by maintaining proper humidity and removing other injurious substances and odors.

TABLE I. Cubic Feet of New Air to Be Supplied per Person per Minute

Schools	Without Humidification or Recirculation	With Humidification but without Recirculation	With Humidification and Recirculation	Number of Air Changes per Hour
Classrooms	30	20	5 to 10	
Assembly Rooms	15 to 20	10 to 15	5 to 10	
Gymnasiums	30	25	15 to 20	
Toilets				10 to 20
Locker Rooms				5 to 10
Kitchens				20 to 60

When intensive recirculation is employed, the use of milk of lime in the washer water may be employed to assist in the removal of CO_2 from the recirculated air.

In connection with the ventilation of schools, the condition in the classrooms for average winter conditions is that the body heat given up to the room from the occupants is less than the heat loss from the building to the outside air, so that the incoming air may be maintained at a higher temperature than that of the air surrounding the occupants. This means that the effective temperature may be controlled within one degree above or below the comfort line.

Assuming that 95 per cent ventilation is required for classrooms, that the distribution is 85 per cent and there is no deduction for dust, bacteria, or odors, we could have a deduction of 85 per cent of 2.5 per cent which is equivalent to about two per cent for CO_2. This would mean 15 cubic feet of air per pupil per minute.

The usual requirement of state laws is 30 cubic feet per pupil which would mean a deduction of one per cent for CO_2, leaving a four per cent deduction for effective temperature, dust, bacteria, and odors. Allowing a deduction of two and one-half per cent for effective temperature there would be a possible deduction of one and one-half per cent for these other items. It will depend, therefore, upon the quality that can be maintained for these other items as to the actual quantity of air required between 15 and 30 cubic feet per minute per pupil.

Where intensive recirculation is employed, the extent of the recirculation will depend on the quantity of CO_2 odors, and other objectionable factors which can be removed from the recirculated air and also upon the ability to keep the relative humidity from rising to an undesirable point on account of the vapor given up to the air by occupants of the building. There is no question, with proper apparatus and operation, that recirculation in classrooms can be successfully carried to from 75 to 85 per cent where 30 cubic feet of air per minute is handled per pupil.

In the ventilation of school auditoriums where the occupancy of the rooms is of relatively short duration of from one to two hours, the initial air in the rooms may be relied upon to reduce the intensity of ventilation required so that from fifteen to twenty cubic feet of air per person per minute is usually sufficient.

School toilets should be separately ventilated with an air change of from two to five minutes, employing mechanical supply and exhaust with the exhaust twenty per cent in excess of the supply in order to prevent objectionable odors from diffusing into other parts of the building.

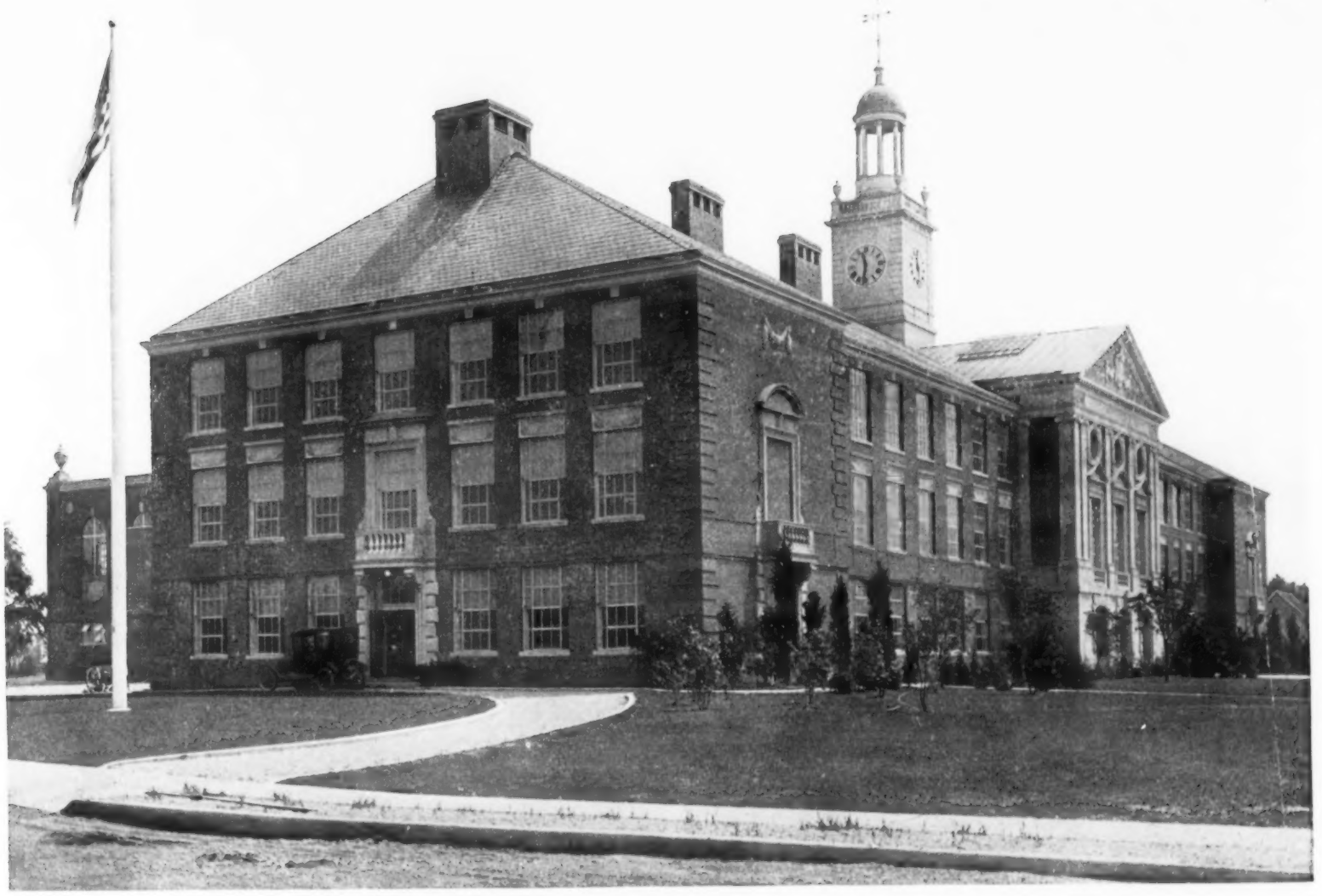
Kitchen and lunch rooms should be ventilated with about a five minute air change for lunch rooms and a one to three minute air change for kitchens, with at least a part of the exhaust taken from the lunch rooms through the kitchen so as to keep all of the air traveling toward the kitchen, thus preventing the kitchen odors from diffusing into the lunch rooms.

Appendix. Special attention is called to the fact that all that has been said regarding the quality of ventilation, as effected by effective temperature for summer conditions, is based on our present standard of a 64 degree comfort line, applicable to all seasons of the year.

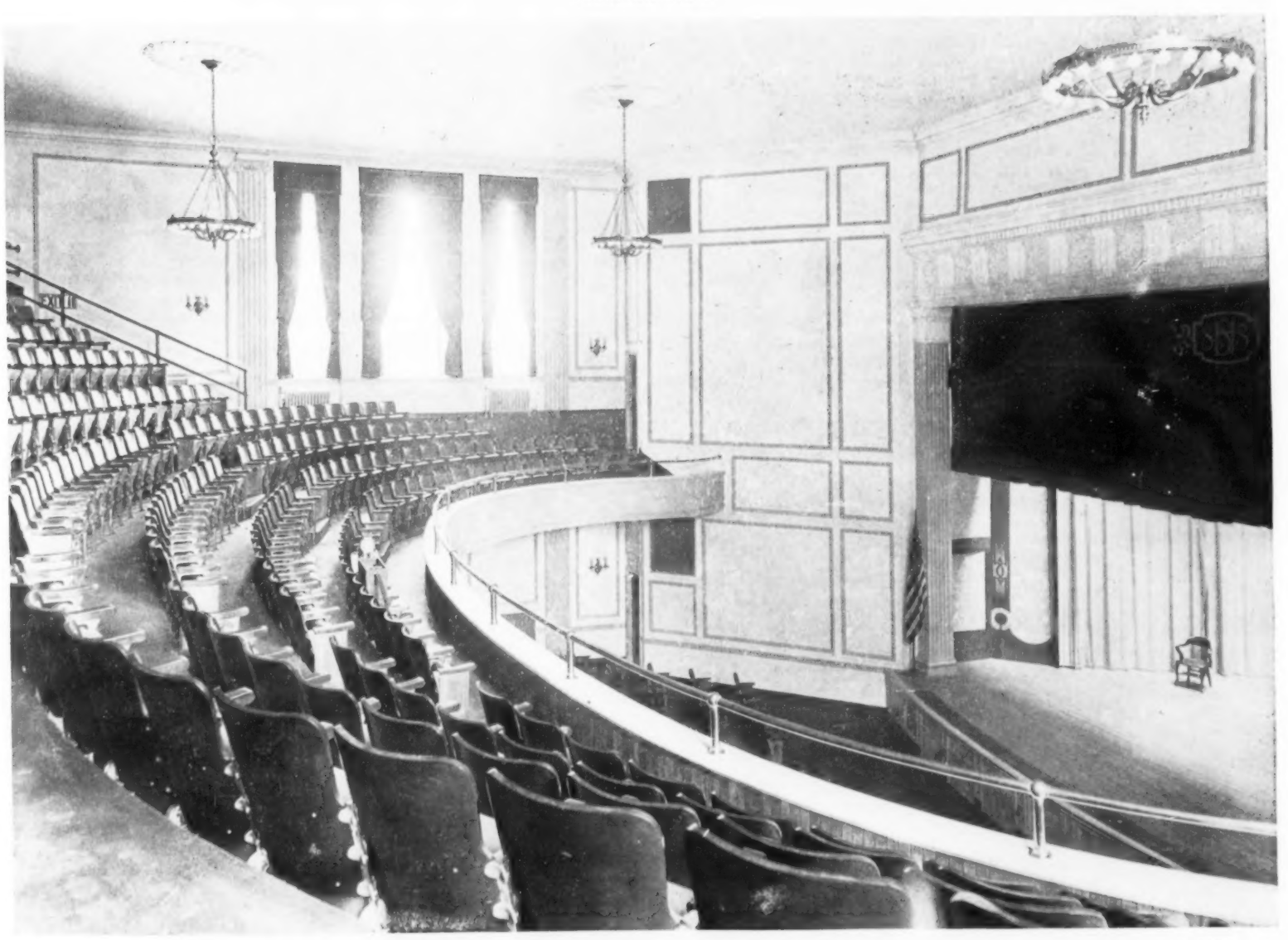
There is no question that the season differences in the out-of-doors atmospheric conditions, the difference in the weight of one's

(Concluded on Page 128)

GYMNASIUM OF THE THOS. L. HANDY JUNIOR HIGH SCHOOL, BAY CITY, MICHIGAN.
Perkins, Fellows & Hamilton, Architects, Chicago, Illinois.



GENERAL VIEW.



AUDITORIUM.

SOUTH SIDE HIGH SCHOOL, ROCKVILLE CENTRE, NEW YORK.

Huse T. Blanchard, Architect, New York, N. Y.

THE ROCKVILLE CENTRE HIGH SCHOOL

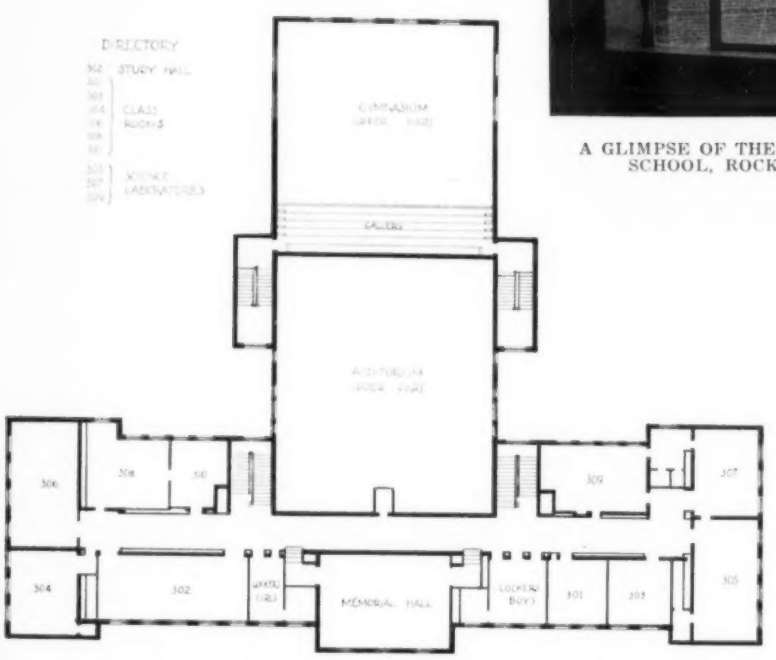
Rockville Centre, N. Y., has completed the construction of a new high school that houses 1,200 pupils. It is a three-storied structure with solid brick walls, the upper stories being of brick veneer on hollow tile. The floors throughout are of steel lumber. There are no rooms in the basement except those employed for the heating system.

The school is in part intended to serve as a memorial to those of the community who served in the world war. The socalled memorial room on the third floor is, therefore, a feature of the building. It houses war relics. The floors and partitions of the entire building are of fireproof materials in accordance with recent ideas for this type of construction, and the windows, sash and frames are of steel. The building is liberally provided with fireproof stairs, and that the question of exits has been carefully considered is evidenced by the fact that there are entrance doors for the pupils at five different parts of the building.

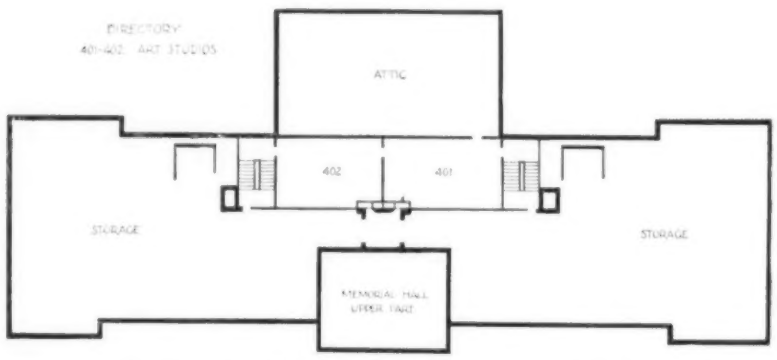
A GLIMPSE OF THE COURT, SOUTH SIDE HIGH SCHOOL, ROCKVILLE CENTRE, N. Y.

The gymnasium wing has been so planned that one-half may be used by girls and the other by the boys, each as a separate unit. Each half of the gymnasium is large enough for a game of basketball, and by raising a net it is possible to throw the entire floor into a large room for exhibitions and games. A gallery for spectators is provided. By means of this gallery and seats on the gymnasium floor nearly 1,000 spectators may be accommodated.

The cost per cubic foot is 32 cents, including equipment and architects' fees, or $500 per pupil. The board consists of Alfred E. Ives, president; Michael J. Madden, secretary; Edna D. Bennett, James G. Joslin and John H. Scott. The building was planned by Huse Templeton Blanchard, architect, New York City.

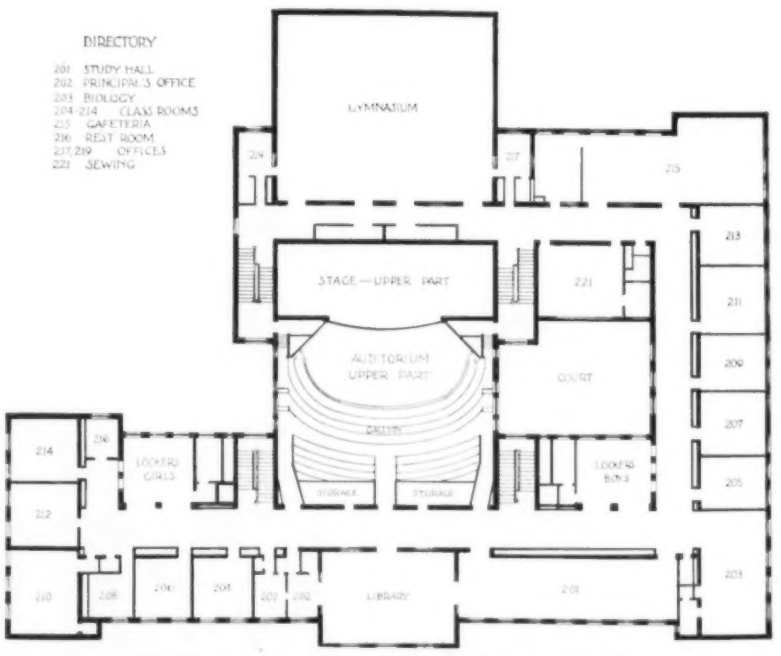


THIRD FLOOR PLAN, SOUTH SIDE HIGH SCHOOL, ROCKVILLE CENTRE, N. Y.



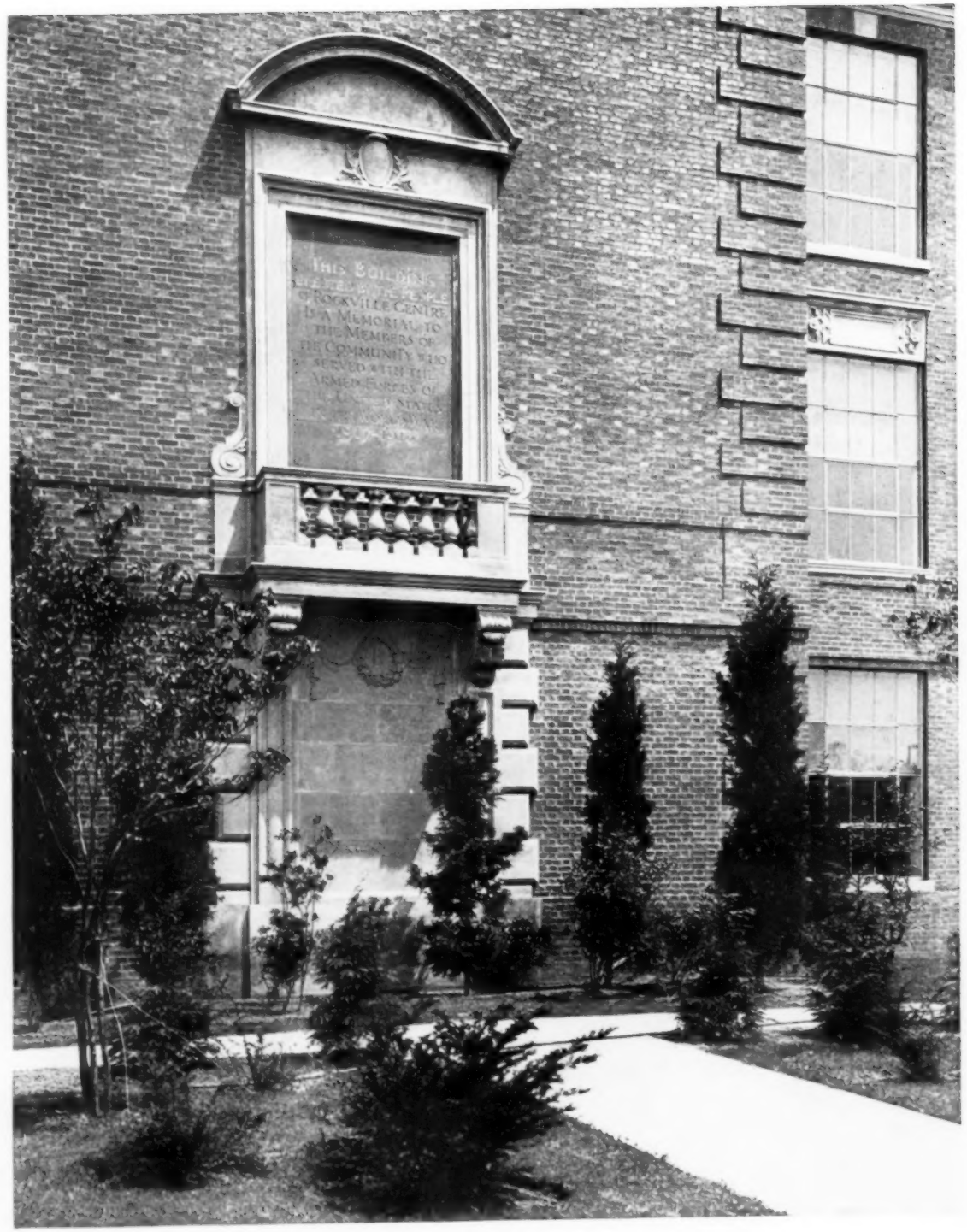
FOURTH FLOOR PLAN, SOUTH SIDE HIGH SCHOOL, ROCKVILLE CENTRE, N. Y.

FIRST FLOOR PLAN, SOUTH SIDE HIGH SCHOOL, ROCKVILLE CENTRE, N. Y.



SECOND FLOOR PLAN, SOUTH SIDE HIGH SCHOOL, ROCKVILLE CENTRE, N. Y.

HUSE T. BLANCHARD, ARCHITECT, NEW YORK, N. Y.

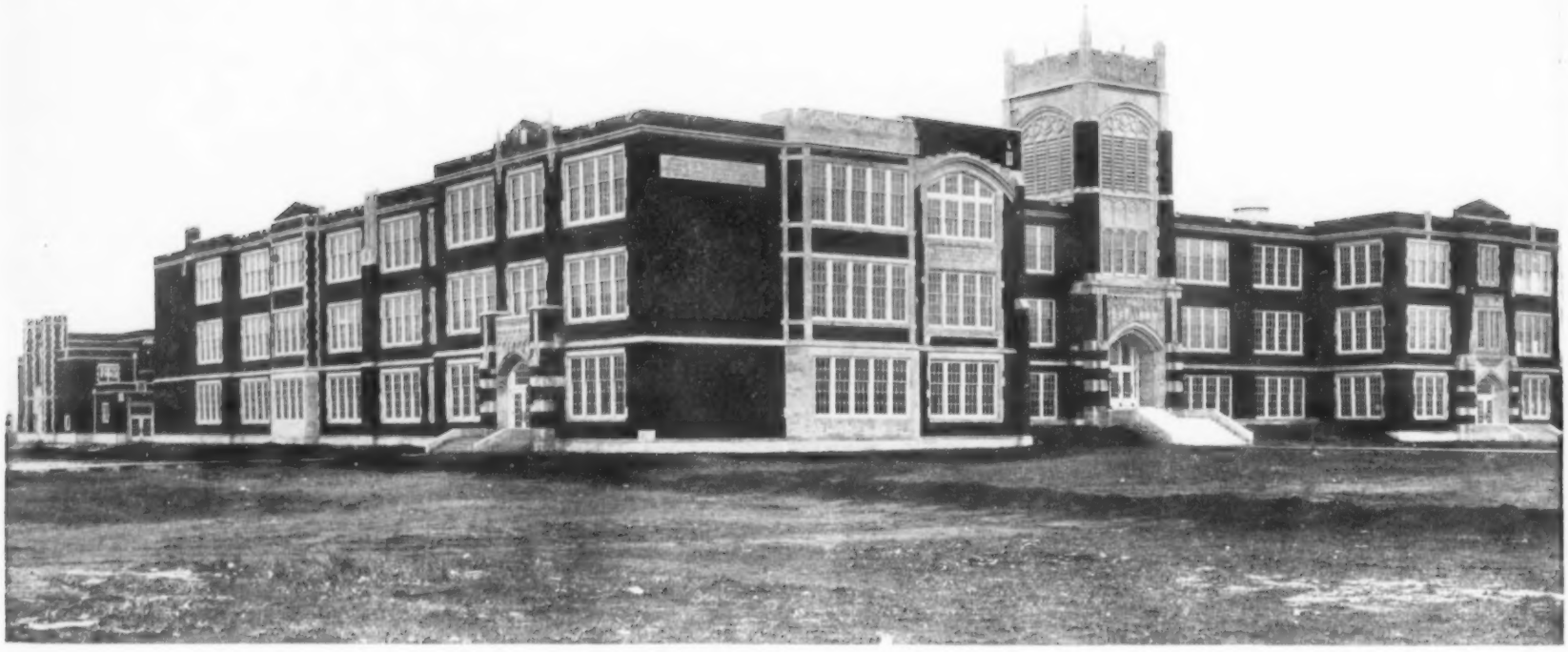


DETAIL.

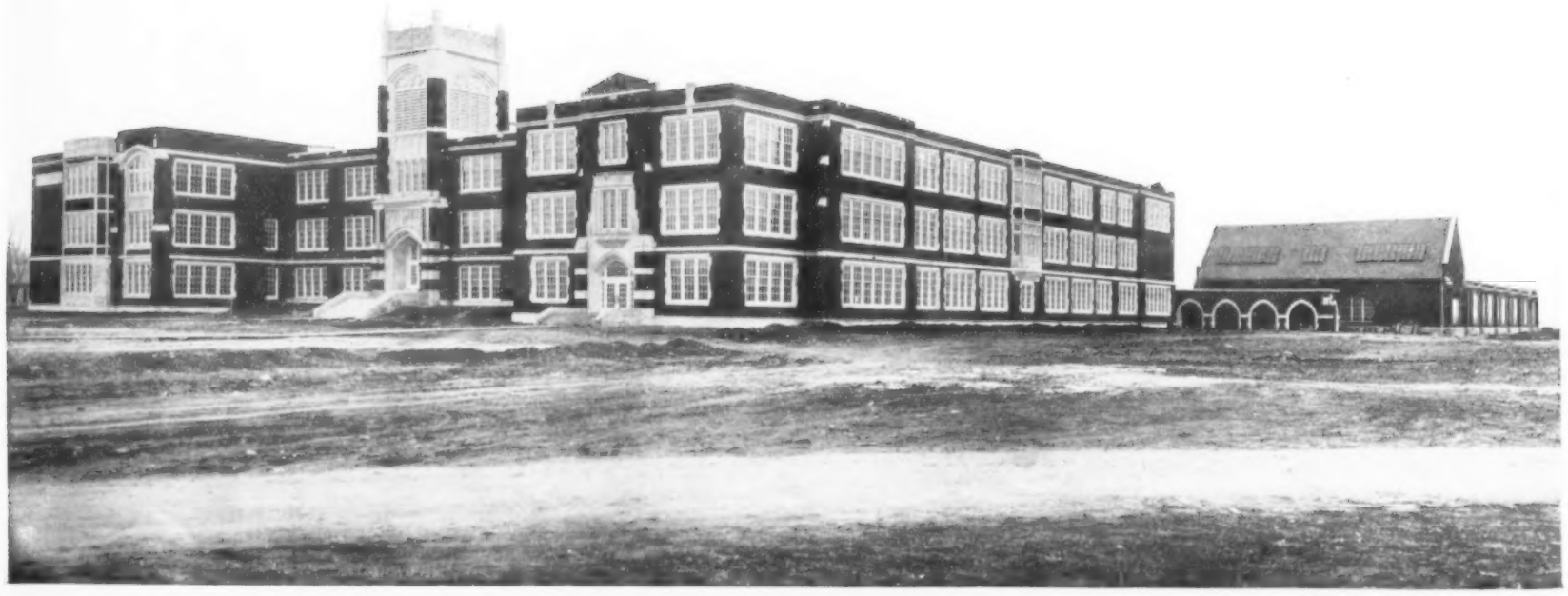
MAIN ENTRANCE.

SOUTH SIDE HIGH SCHOOL, ROCKVILLE CENTRE, NEW YORK.

HUSE T. BLANCHARD, ARCHITECT, NEW YORK, N. Y.



MAIN BUILDING—GYMNASIUM AT EXTREME LEFT.



MAIN BUILDING—MANUAL SHOPS AT RIGHT.

WICHITA HIGH SCHOOL, WICHITA, KANSAS.
LORENTZ SCHMIDT & CO., ARCHITECTS, WICHITA, KANS.

THE NEW WICHITA HIGH SCHOOL

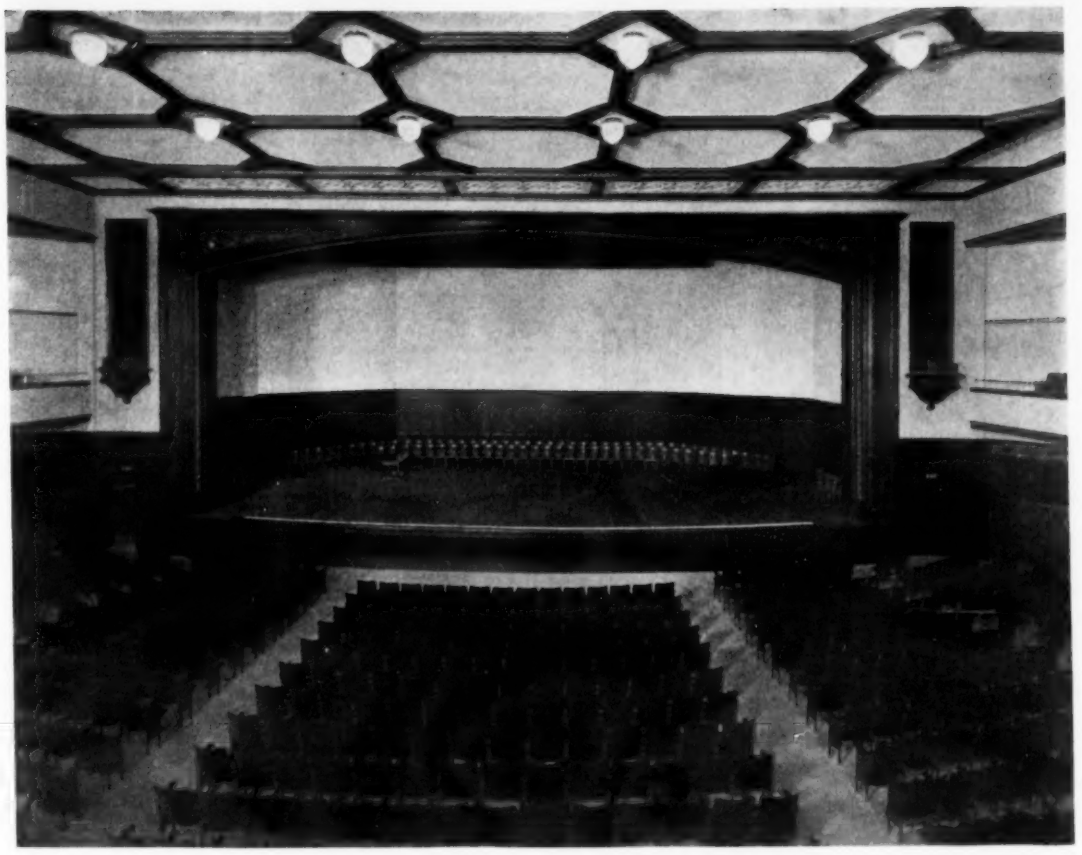
The loyalty of the people of Wichita, Kansas, to the cause of education is well attested in the new high school erected in that city. The architects in approaching their task were actuated by an ambition to adhere faithfully to the fundamentals of utility and beauty in design as applied to architecture.

The project presented problems of its own. It meant three distinct units or groups on an irregular plan. The main building provides the facilities for academic training. The next, or shop group, is arranged to meet the needs of modern industrial training, and the third is designed to serve the physical education end of the school plant.

Access to the main building is gained through five entrances delivering to the general corridors in each of the four corners, and one to the second floor at the center on the main axis of the building. Notwithstanding the irregularity of the plan, it has been developed on a longitudinal axis on which the tower and auditorium have been centered.

There are likewise four entrances to each of the other groups and so arranged as to make every part of the building easily accessible. The corridors make a complete circuit of the main building with double stairs at each of the four corners, and to avoid oppressive darkness the auditorium is flanked by light courts which bring sunlight to the very heart of the building. The physical education group is connected with the main building by a cloister, the traceried arches of which form a most pleasing feature as well as a happy solution to a difficult architectural problem. The treatment of the gymnasium is a bit more severe than the main building. The entrance is in the form of a rectangular hooded elliptical arch of somewhat later period than that of the other arch. A cloister with simple arches makes connection with the industrial group and thus completes the unity and connection of the three structures.

It is obvious that the manual training wing requires a simpler treatment than that accorded the academic wing. The walls remain unplastered, and, for educational reasons, the shop atmosphere is introduced. At the same time the economy idea is met in a practical fashion. The element of simplicity is also introduced in the gymnasium. By isolating the building, a maximum of light and air is secured.



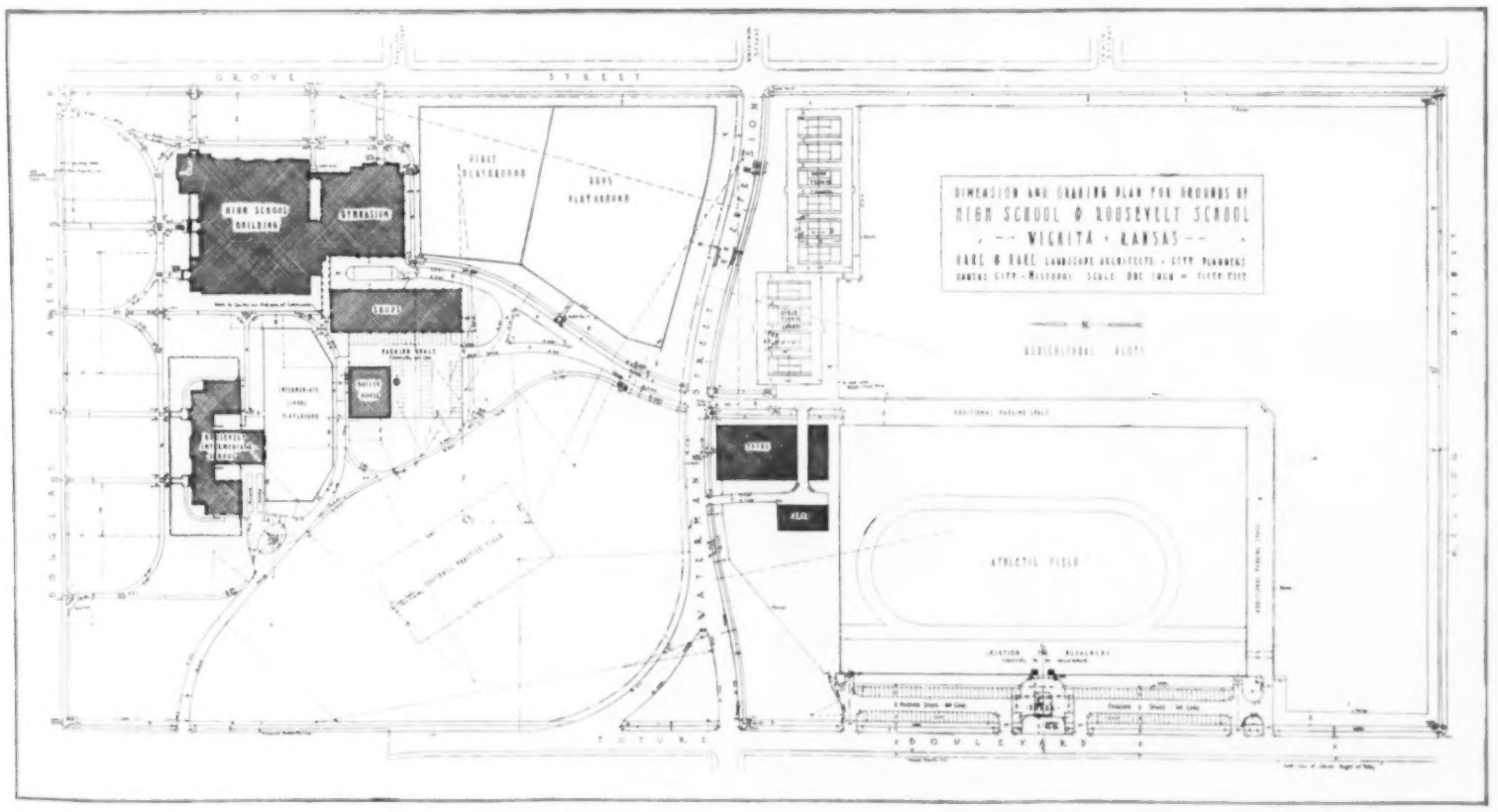
AUDITORIUM, WICHITA HIGH SCHOOL, WICHITA, KANS.

In discussing the element of economy in construction, Mr. Lorentz Schmidt, the architect, said:

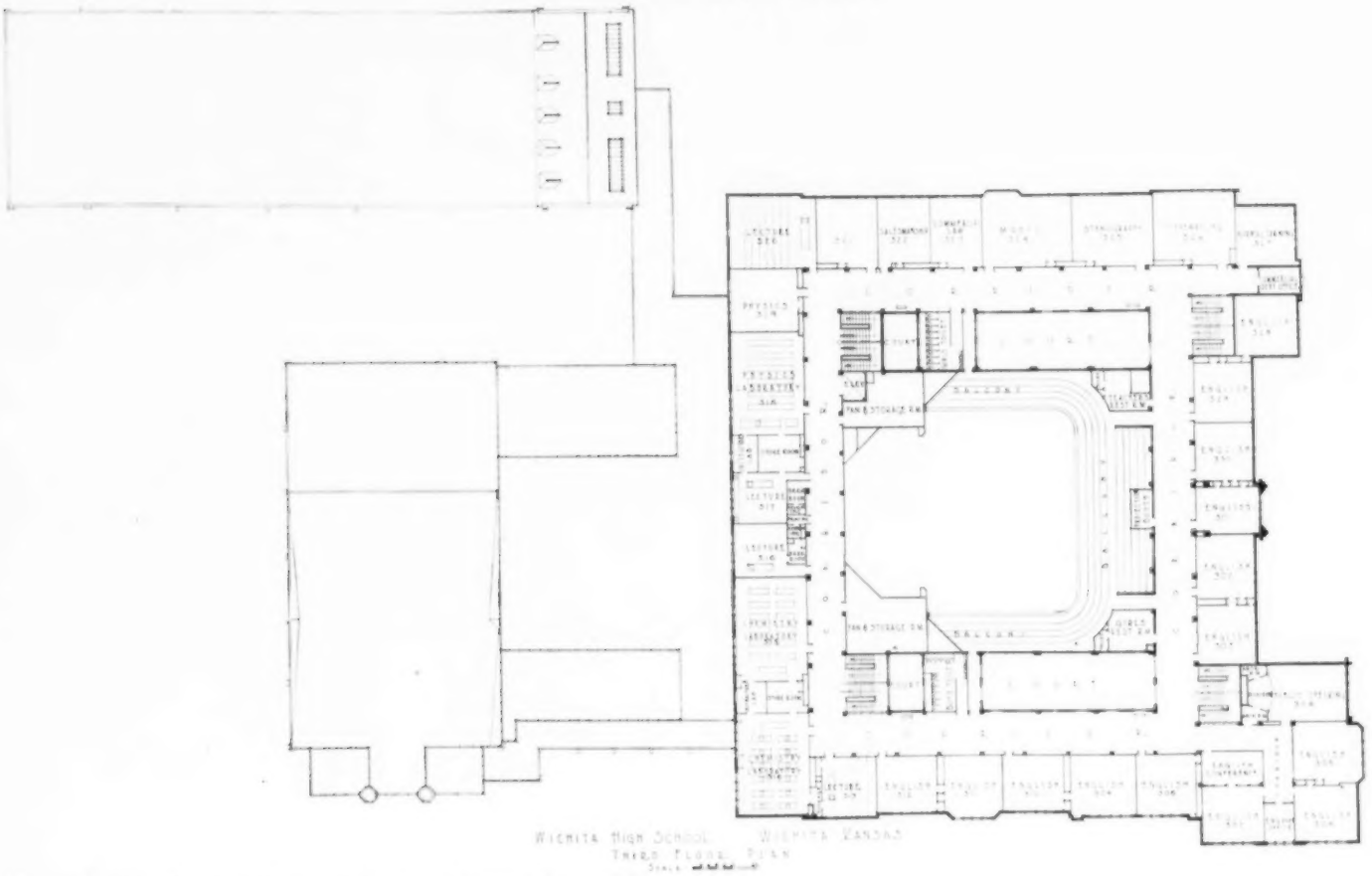
"In the planning of a large structure for which the funds are limited it is very essential that a great deal of thought be given to the various systems of construction in order to determine which is the most economical, and it usually results in finding that several different systems are used throughout the building. For instance, in the standard classroom portions of the Wichita high school, it developed that skeleton reinforced concrete construction with load bearing walls for the exterior, using concrete joist construction for the floors, was the most economical of the many systems that might have been used. In other sections of the building that are less standard, it was found that flat slab and beam construction was the most economical and satisfactory. Then again, the ceiling over the cafeteria, which forms the floor for the auditorium, the mushroom system of construction was adopted. The construction of the auditorium developed into the use of structural steel almost throughout. In a large building several different types of construction can be used to an advantage, but this is not usually true in a smaller building."

In locating the several departments, some regard was had for its needs. For example, the mathematics and English departments, study halls and libraries are placed on the east and north, while the laboratories, domestic science and domestic arts departments are placed on the south and west portions of the buildings.

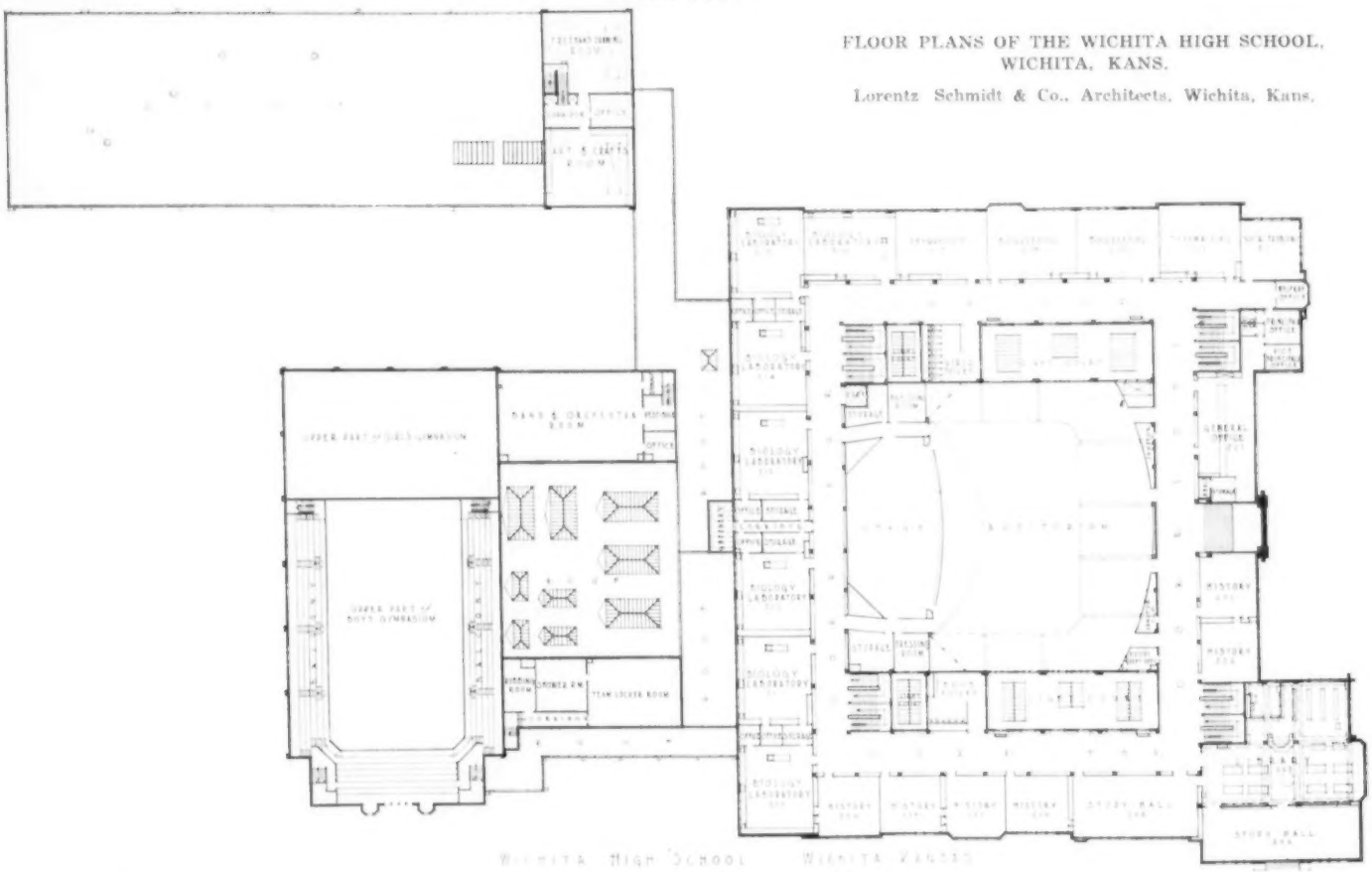
The cafeteria and kitchen are placed under the auditorium. The kitchen, being to the rear, renders it accessible for the receiving of supplies. This also places it near the refrigeration plant, laundry and storage.



PLOT PLAN OF THE WICHITA HIGH SCHOOL, WICHITA, KANS. Hare & Hare, Landscape Architects, Kansas City, Mo.



WICHITA HIGH SCHOOL WICHITA KANSAS
THIRD FLOOR PLAN

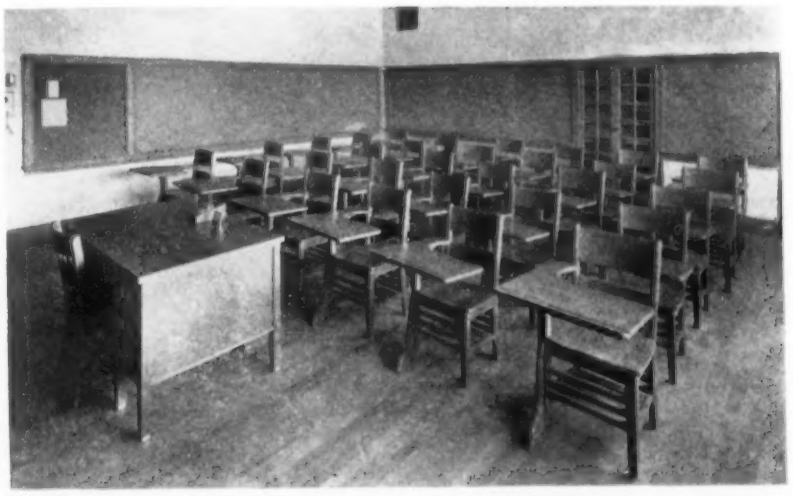


WICHITA HIGH SCHOOL WICHITA KANSAS
SECOND FLOOR PLAN

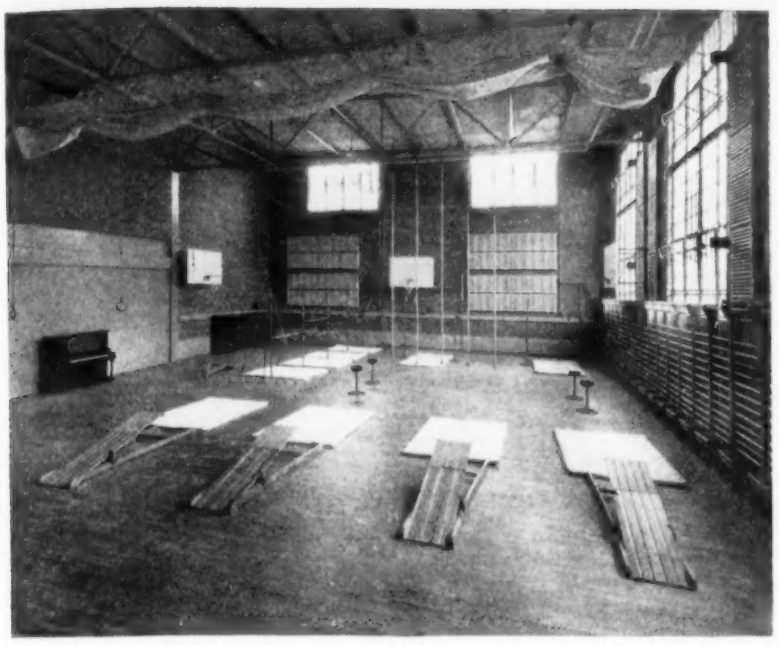
FLOOR PLANS OF THE WICHITA HIGH SCHOOL, WICHITA, KANS.

Lorentz Schmidt & Co., Architects, Wichita, Kans.

CONCENTRATION STUDY ROOM, WICHITA HIGH SCHOOL, WICHITA, KANS.

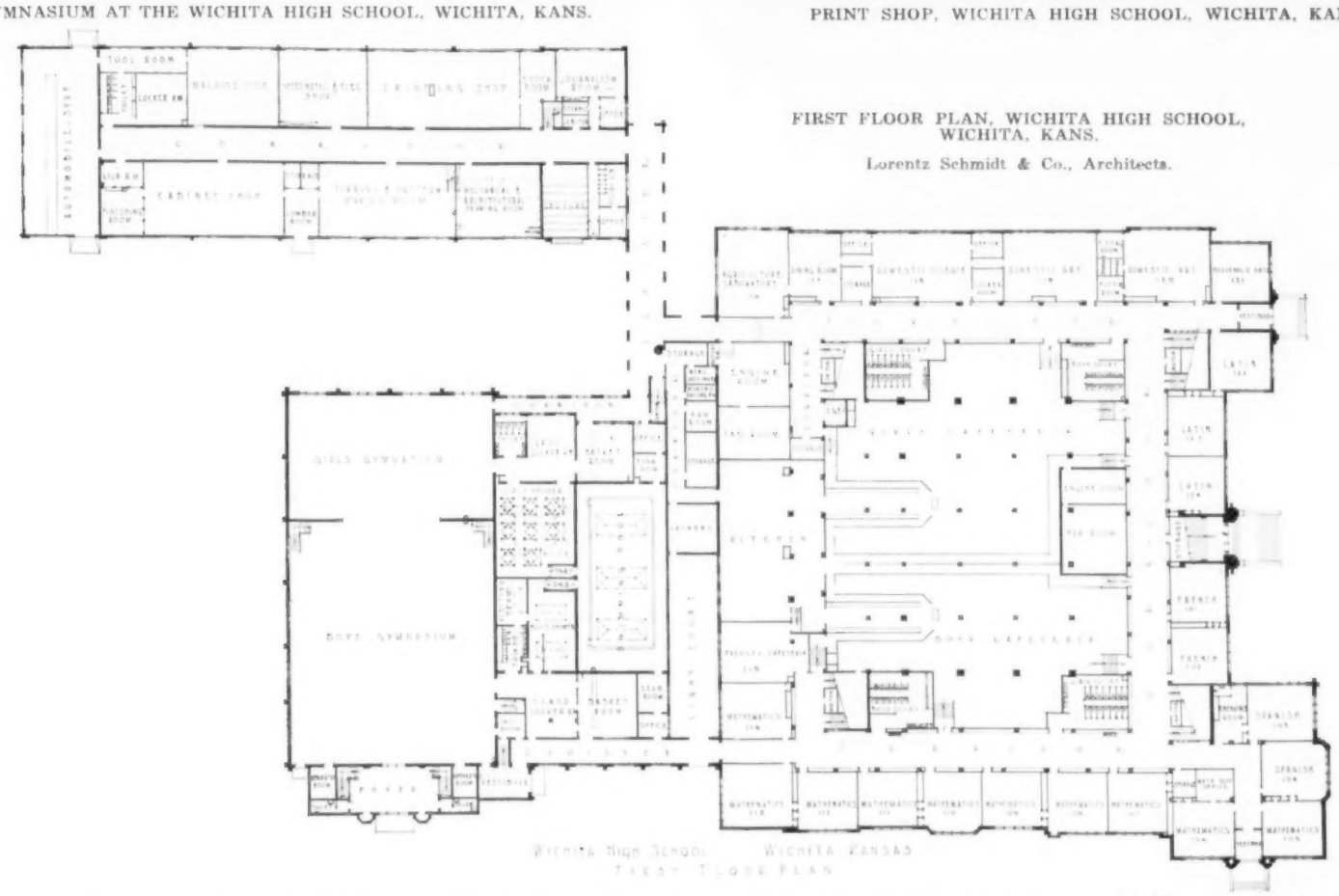


A TYPICAL CLASSROOM, WICHITA HIGH SCHOOL, WICHITA, KANS.



GIRLS' GYMNASIUM AT THE WICHITA HIGH SCHOOL, WICHITA, KANS.

PRINT SHOP, WICHITA HIGH SCHOOL, WICHITA, KANS.



FIRST FLOOR PLAN, WICHITA HIGH SCHOOL, WICHITA, KANS.

Lorentz Schmidt & Co., Architects.

The auditorium has a seating capacity for 2,200 students with a stage large enough to seat 350 more. Above the stage an organ space has been provided and in the rear provision has been made for an echo organ. A complete locker system is provided. The lockers are recessed in the corridor walls.

The cost of the three buildings, plus the heating, ventilating, electric wiring and fixtures and plumbing, will not exceed 21 cents per cubic foot. The manual training building will cost 18 cents per cubic foot, the gymnasium 20 cents and the main building 22 cents. The total construction cost is $861,405. Adding the equipment, amounting to $183,405, the grand total reaches the sum of $1,044,810.

The architects are Lorentz Schmidt & Company of Wichita, Kansas.

THE SCHOOLHOUSE ARCHITECT — OUTSIDER OR LOCAL TALENT—WHICH?

In the practical affairs of life many things have experienced the touch of change and evolution. Schoolhouse architecture is one of these. The art itself has undergone a marvelous development, but the selection of architectural services has been subjected to even a greater change.

The architect who once upon a time flitted from school board to school board with beautifully colored pictures of schoolhouses under his arms, and who dealt in pretty speeches in order to win contracts, is a thing of the past. The ready-to-wear style of school buildings is no longer in vogue; fabricated structures are no longer wanted.

The school is no longer fitted into its own housing; the housing moreover is fitted to the school. The architect measures and weighs the school and its activities and then plans and constructs a building the will house it in such a manner as to achieve the maximum service.

Architecture itself has amplified itself into special service. There are architects who specialize in hotels, office buildings, and apartment houses, others who have given a life's study to the planning of theatres and churches, again others who know how to construct a bank, a mill, or a refrigeration plant.

An architect who may have been highly successful in planning palatial residences, or factory structures may prove an utter failure in attempting to plan a schoolhouse. Nor would the average architect venture into a field which has become so highly specialized. He will leave schoolhouse planning to the experienced schoolhouse architect.

And yet every little while a town is set in a turmoil because the board of education has ignored local talent and gone outside of the community for a school architect. The local man has done much work for his fellow citizens and has won their confidence. He has built homes, stores, and factories, but he has never built a schoolhouse. The outside man comes with a high reputation as an architect who has built many schoolhouses and who knows how to build them.

The general public does not always appreciate the fact that after all it is more economical in the end to secure the right man even though he may be an outsider. The most expensive blunders in school architecture which have come to light in recent years are those where local favoritism excluded the non-resident expert.

The school board that is thoughtful and circumspect will ignore local clamor when it comes to the planning of a school building. It has by this time become a well established fact that

(Continued on Page 128)

The Rochester Elementary School Plans

Francis R. Scherer, Assistant Superintendent of School Buildings, Rochester, N. Y.

Editor's Note. The description presented by Francis R. Scherer demonstrates that an intensive study of the essentials of a modern elementary school was made before the construction labors on two buildings were begun. Every consideration relating to safety, durability, and economy, as well as flexibility, expansion, and esthetic fitness, was carefully weighed. The board of education plans, which originally intended one large building, were so modified as to provide two substantial buildings in different localities ensuring greater convenience of access for both.

Mr. Scherer has brought to his service the best thought and experience in school architecture and has planned two splendid structures, which not only express the most utilitarian in schoolhousing, but also observe the elements of grace and dignity in design and finish.

The board of education after considerable study adopted a design for elementary schools under which two buildings are being constructed. This caused a modification of the building program of 1921 which had been halted through force of circumstances. During the past summer the common council authorized a bond issue of $600,000 and instead of spending the major sum upon one school it was agreed to serve two districts at the same time.

Accordingly, there was designed, in the office of the superintendent of school buildings, a new type of building which might be built in three units, the first of which would consist of the administration quarters, auditorium-gymnasium, kindergarten, manual training and domestic science rooms, doctors' and nurses' quarters, teachers' lunch and rest room and permanent heating plant, together with 14 regular classrooms. The second unit, which will be the first addition, will consist of 11 classrooms, while the third unit will be the second addition and will consist of eight classrooms.

This method of unit building is in keeping with the established policy of the board of education to erect complete school buildings, there being, however, one variance with this former policy due to the fact that heretofore a building was erected which would not only care for the immediate needs of the district to be served but a sufficient number of classrooms were built under the first contract to provide accommodations for the estimated growth in this district for a period of a few years.

In designing this latest type of building the regulations of the city building code and the state department of education were complied with, and many recommendations of the National Fire Protection Association were adopted. Aside from these building requirements the design has been governed by its adaptation to educational needs, to safety, to healthfulness, to expansiveness, to flexibility, to convenience, to durability, to esthetic fitness, and to economy.

As to adaptation to education needs the building has been designed for the traditional plan where the classrooms accommodate the entire number of pupils in attendance and where a classroom is empty when the class goes to the gymnasium, manual training or domestic science rooms.

As to safety, this building will be of fire-resistive construction throughout, the only wood being the doors, windows, and trim. The building will permit of being emptied in less than three minutes even if one stairway is made useless by smoke. Each room will discharge its pupils to a corridor leading directly to a stairway and exit.

As to healthfulness, each room has abundant natural light. The orientation of classrooms east and west will permit of direct sunlight a part of each day. There is a boys' and girls' toilet room on each floor which will receive direct sunlight. Lavatories and drinking fountains recessed in the corridor walls are provided at the corridor junctions. Damp, insanitary, and poorly ventilated rooms are obviated because there will be no basement, there being a five foot air space under the first floor in which are run the pipes and ducts. The building is two stories which obviates excessive climbing of stairs.

Expansion, Flexibility and Durability

As to convenience, rooms have been located with reference to one another to provide for ease in administration. The sink rooms and supply rooms are located at convenient points.

As to expansiveness, this building has been planned so that it can be enlarged without unnecessary cost and without interference with the natural light and ventilation of the existing buildings. To cover the needs resulting from these additions certain facilities have already been planned to cover the enlarged school. These are the administration quarters and the various special rooms. Provision has been made in the heating, plumbing, and electric service for the additions without changing any of the installation in the first unit.

As to flexibility, provision has been made by the use of non-bearing partitions to permit of changes in the length of rooms at a minimum expense. The fresh and foul air flues are placed in the partitions between classrooms and corridors, which will more readily permit changing two classrooms into one.

As to durability, the building will have an estimated life of 75 years, there being a reinforced concrete skeleton frame, floor and roof slabs, and shale brick exterior trimmed with Indiana limestone or cut cast stone.

As to aesthetic fitness, the building though lacking in ornamentation has been clothed with a pleasing exterior. The exterior elevations reflecting the functions of an elementary school have not been made with any sacrifice to the interior arrangement. The interior will produce a plain but pleasing effect which will be considerably enhanced when the walls are decorated.

As to economy, this has been effected by the elimination of waste areas. The percentages of floor space of the building with fourteen classrooms as determined in accordance with the rules of the National Education Association, committee on standardization of schoolhouses, are:

Walls and partitions	7.50%
Flues	2.10%
Corridors and stairs	24.30%
Accessories	.00%
Instruction	54.60%
Administration	11.50%
Total	100.00%

When the two additions have been added to the buildings these percentages will be:

Walls and partitions	7.30%
Flues	2.20%
Corridors and stairs	24.50%
Accessories	.00%
Instruction	54.80%
Administration	11.20%
Total	100.00%

A study was made of the classroom size but after a sketch had been made showing the seating arrangement and aisle space necessary for calisthenics and to care for the wardrobe along the corridor wall, it was found that in no instance could the room size be made less than 23′ 9″ wide and 30′ 0″ long, which has been the standard of the board of education for several years.

Wardrobes will be 2′ 3″ deep inside the classrooms along the corridor wall. They will have sliding doors, each containing a large panel of natural slate blackboard, the doors sliding upward, exposing the clothing when open. Ventilation of these wardrobes is accomplished by air passing under the wardrobe doors when down, the doors stopping within a few inches of the floor, thence passing upward through the wardrobe to and out through a foul air flue.

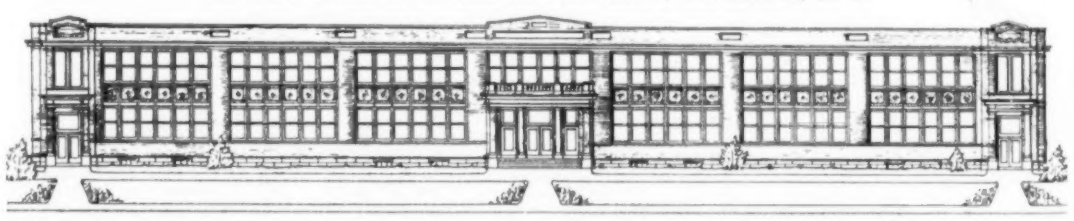
The Auditorium-Gymnasium

The auditorium-gymnasium will be one room which will serve the purpose of an assembly hall, auditorium, and gymnasium. This room will be approximately 48′ 0″ wide and 65′ 0″ long to the face of the proscenium wall, and will contain a balcony and a moving picture booth, the seating capacity being 492. There will be no permanent seats because of the gymnasium work. The auditorium will be equipped with a stage which will permit of school plays, debating, addresses and other forms of pupil and community activity. The chairs used for seated assemblies will be piled on trucks and when not in use will be kept in a chair-storage room off the assembly room. The auditorium-gymnasium will be on the first floor and will be so arranged that it can be easily reached by the public when used for community activities without throwing open the entire school building.

The kindergarten unit, while integral with the school building, might be considered as a distinct unit in that it will have its own entrance, wardrobe, and toilet rooms. The kindergarten unit with a southern exposure will consist of one large room with two alcoves, each of which will accommodate a teacher and twenty-two pupils at table work.

The domestic science room will be a regular classroom unit without the wardrobe, having a capacity for twenty pupils and will be equipped with ten domestic science tables with a gas stove

SOUTH ELEVATION OF THE GRADE SCHOOL, ROCHESTER, N. Y.



EAST AND WEST ELEVATIONS OF THE GRADE SCHOOL, ROCHESTER, N. Y.

at the end of each table, there being a sink for each two tables. In addition, the room will contain two laundry trays and two folding ironing boards and cupboards for the storage of material.

The teachers' lunch room will be a regular classroom unit without a wardrobe, partitioned off, one-third being devoted to a service room which will be next to the domestic science room, containing a gas stove, sink, refrigerator, cupboards, etc. The remaining two-thirds of the unit will be the teachers' lunch room which will seat thirty teachers at one time.

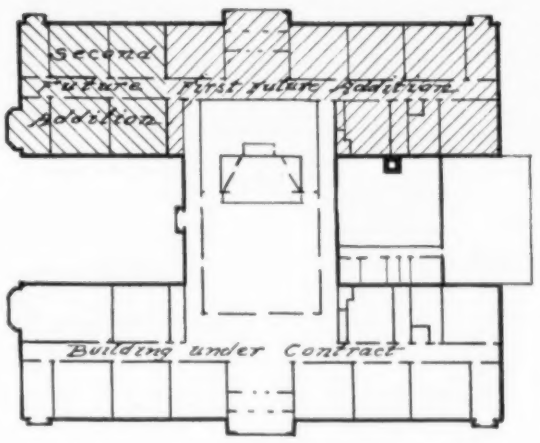
The manual training room will be a classroom unit without a wardrobe. It will have a capacity for twenty pupils, the equipment consisting of four benches running lengthwise of the room, two tool cabinets, lumber rack, etc.

The administration quarters will be subdivided to form a waiting room, clerk's office, principal's office, toilet room, and store room. The teachers' rest room will be a small room with a toilet room off of it. The importance attached to physical education and health education require that a place in the school building be provided for dispensary rooms. This group of rooms comprising a classroom unit, will contain a waiting room and consultation room for doctor and nurse, with toilet, lavatory, and dressing room.

Corridors, Entrances and Exits

The arrangement of corridors, entrances, and exits will be such as to give balance to the building as well as to provide for utility, convenience, and safety. The corridors will be of a width to allow pupils to pass in an orderly manner from one part of the building to another. Main corridors will be 10′ 0″ in width, and the secondary corridors 8′ 0″ in width. Each corridor will be well lighted and will lead directly to an exit, the exits being so placed as to provide a safe outlet from each room in case of fire or panic, as well as to permit of easy administration of the school.

Stairways leading to the upper floor will be



PLAN SHOWING THREE UNIT GRADE SCHOOL BUILDING, ROCHESTER, N. Y.

at opposite ends of corridors. No exterior fire escapes will be used, there being a sufficient number of stairways to permit of rapid egress from the building. Stairs will be of reinforced concrete construction, 44″ wide, which width restricts the pupils marching more than two abreast and which permits of each pupil having a hand rail. The balustrades will be of closed construction. Stairways will be separated from the corridors they serve by Kalamein partitions and doors, the doors held open, but equipped to close automatically in case of fire.

Exterior doors will contain one large panel of polished plate glass and be arranged in groups with a mullion between each door, each being equipped with a door check and panic bolt. The doors to classrooms will be at the teacher's end of the room and will be of the flush type containing a small observation window. All hardware will be solid bronze polished.

Walls and Floorings

The building will have surface flooring of heavy brown battleship linoleum excepting in the toilet rooms and sink rooms which will be of terrazzo. The linoleum will be cemented to the concrete floors and turned up against the walls, forming a linoleum covered base finishing flush with the plaster and being held in place by means of a zinc strip which will conceal the joints and serve as a ground strip for the plaster. The decision that linoleum be used was made as the result of formal bids received upon surface flooring, which show that linoleum laid in this manner costs less than maple flooring on wood sleepers. (Reference to article "Comparative Costs of School Buildings" in SCHOOL BOARD JOURNAL, February, 1924.) This flooring will make desirable the use of the Moulthrop type of furniture.

All walls and ceilings will have a smooth and hard white putty-coat finish which will be permitted to stand for about two years before being painted. The covering on roofs will be a built-up three-ply, all rag felt roofing, mopped with specially prepared asphalt suitable to this particular climate and to the pitch of the roof.

This building will be equipped with an electric fire alarm system with gongs so located in the corridors that they can be heard in every part of the building. Signal stations from which the alarm may be sounded are so located on each floor that a person need not go more than 125 feet to reach one.

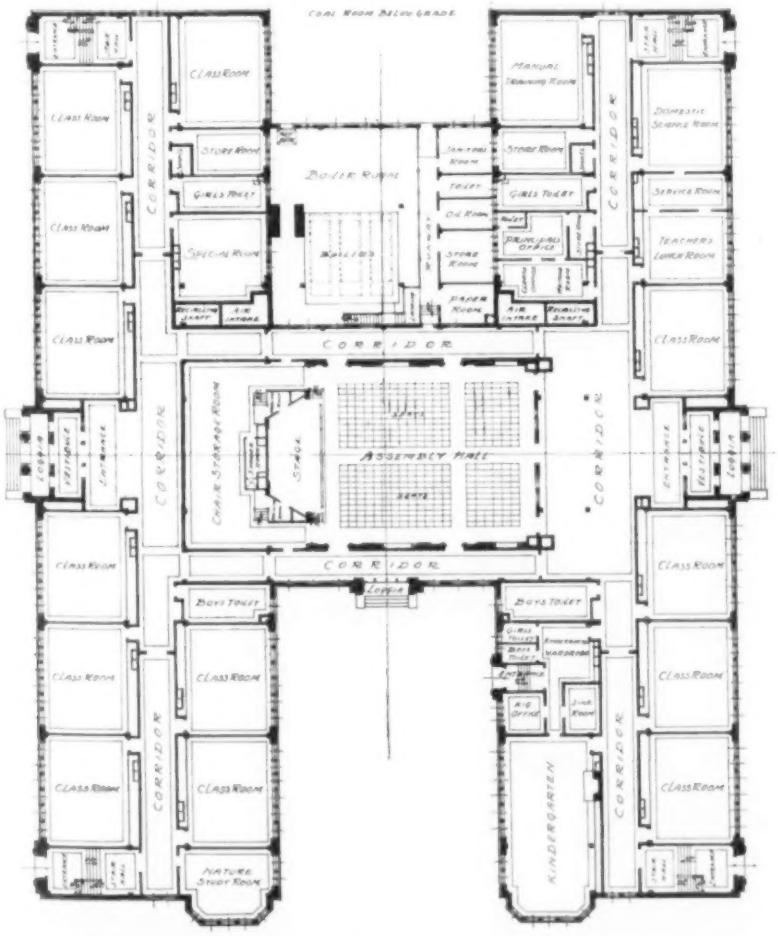
Lighting—Natural and Artificial

Natural lighting of each classroom will be by unilateral banked windows with east or west exposure, the glass area being one-fifth of the floor area of each room. The light will come from the left of the pupils and the windows will be kept as close to the ceiling as practicable so as to throw the volume of light across the room. Stairways and corridors will be well lighted by both natural and artificial light.

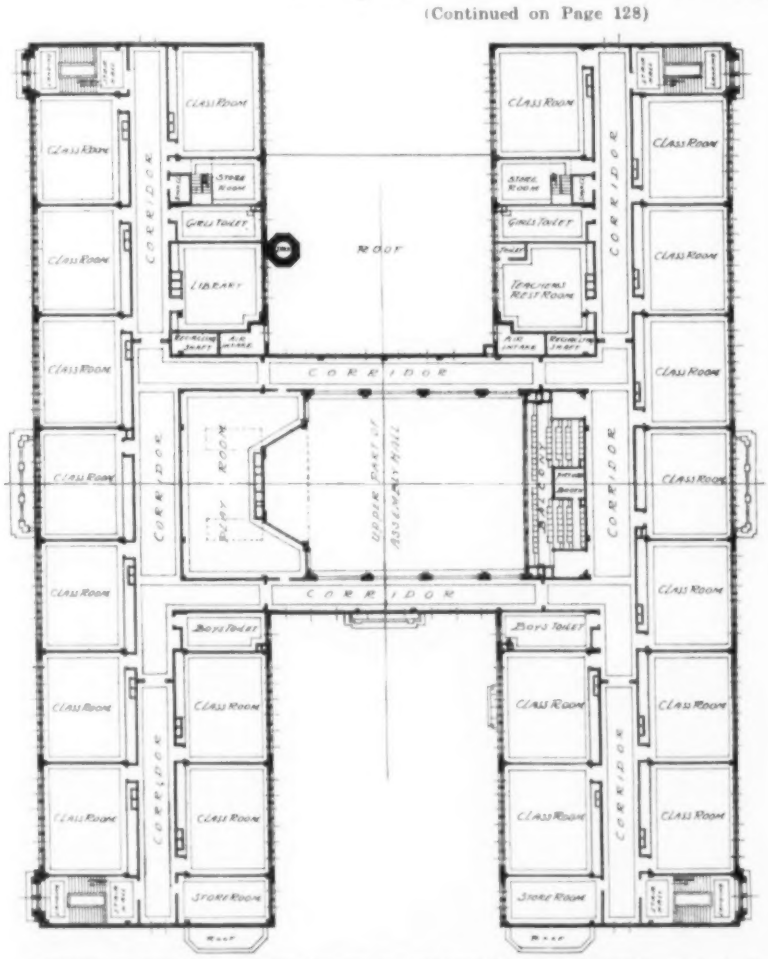
The rooms will be artificially lighted by semi-direct lights, there being four ceiling lights in each classroom so arranged as to give an even distribution of light at the top of the desks, with an intensity of between five and six foot-candles. Corridor lights will be arranged to give two foot-candles at the floor and the auditorium-gymnasium lighting to give three and one-half foot-candles at the floor.

Translucent shades of an ecru color will be used in all rooms. Each window will be equipped with two shades operated by double rollers placed near the level of the meeting

(Continued on Page 128)



FIRST FLOOR PLAN, NEW TYPE OF GRADE SCHOOL, ROCHESTER, N. Y.



SECOND FLOOR PLAN, NEW TYPE OF GRADE SCHOOL, ROCHESTER, N. Y.

Normal Schools

James O. Betelle, Member of the Firm of Guilbert & Betelle, Architects, Newark, N. J.

When a board of education and their architect are called upon to prepare plans for a normal school building, they usually start out by investigating what has been done elsewhere and either visit nearby normal school buildings, or obtain the plans. Closer investigation discloses that there are comparatively few examples of good normal school buildings, and that there has been very little progress made in normal school design when compared with the great progress which has been made in other types of school buildings.

There are several reasons for this, one being that there are but few normal schools compared with the volume of other school buildings. The design of these buildings is oftentimes handled by a state department, whose organization is limited by the state legislature, so that they have not the facilities to make this research and study which the importance of the building warrants.

The educational officials know the functions of a normal school building, its object, and course of study, but the average architect, and in fact even the ones who make a specialty of school buildings, are seldom familiar with the normal school type. This article is, therefore, written more for the benefit of the architect than for the educational official.

It is assumed that everyone knows that the object of a normal school is to train students for teaching in the public schools of our country. The ordinary normal school provides a two years' course for graduates of our high schools, the successful completion of which permits the graduate to teach in the first eight grades of the public schools. A normal college provides a four years' course, confers a degree, and permits the graduate to teach either in the grade school or the high school. The normal colleges are comparatively few, as most of the young women who are preparing to be school teachers are satisfied to teach in the first eight grades. In locations where there is no normal college, the student desiring to teach in high schools obtains a degree and qualifications at an established college. There is a marked demand for more and more normal colleges, and those states which now have only the two years' course are working hard to secure the consent of their legislatures to establish teachers' training colleges.

The architect designing a normal school should at the outset realize the different functions it performs from the usual eighth grade school or high school. The students who attend the normal schools are already high school graduates and they have had their training in mathematics, English, sciences, etc. Their principal object in attending the normal school is to learn how to apply this knowledge in teaching others. In view of the fact that the graduate of a two years' normal school cannot teach any of the higher subjects, there is no need for any elaborate laboratories or college equipment. Laboratories are sometimes installed, but when they are they are of the simplest type, and used for instruction only in elementary sciences.

The routine of the classes is the same as in a high school. In other words, it is operated on a departmental basis, the students changing rooms each period. This means that the plan is similar to a high school, rather than to a grade school, with locker rooms for the care of the pupils' clothing in convenient places. It must also be realized that these schools are almost entirely used by girls, the proportion of young men being almost negligible. In a normal school for six hundred, there may be thirty young men training to be teachers, and most of these will be in the physical training department or the manual training department. Nevertheless, some provision has to be made for the men pupils, and their own locker rooms, toilets, etc., are provided, one set of lockers being for the combined use of their gymnasium suits and their street clothing, while the girl pupils have separate lockers for their gymnasium suits and street clothing.

Another fundamental in which a normal school differs from a high school is in its demonstration or practice teaching classes. As the purpose of a normal school is to train teachers, the students naturally must have some practice in their chosen profession. This is done in two ways. As much practice work as possible is done in the normal school itself by bringing in classes from the neighboring schools, or if there is sufficient room, having one class of each of the eight grades permanently located in the building, where the students practice teaching under the direct supervision of the teaching staff of the school. In many large normal schools, if it is not possible to have sufficient classes to take care of the practice teaching for all the students, then the great majority of them must spend their ten weeks of this work in the neighboring schools, under the direction of a public school teacher, with occasional visits from the critic teacher and the supervisor from the normal school. This means that a considerable number of the normal school pupils, while enrolled, are not actually in the building, and, therefore, the school accommodates a slightly larger number of pupils than the number of rooms would indicate.

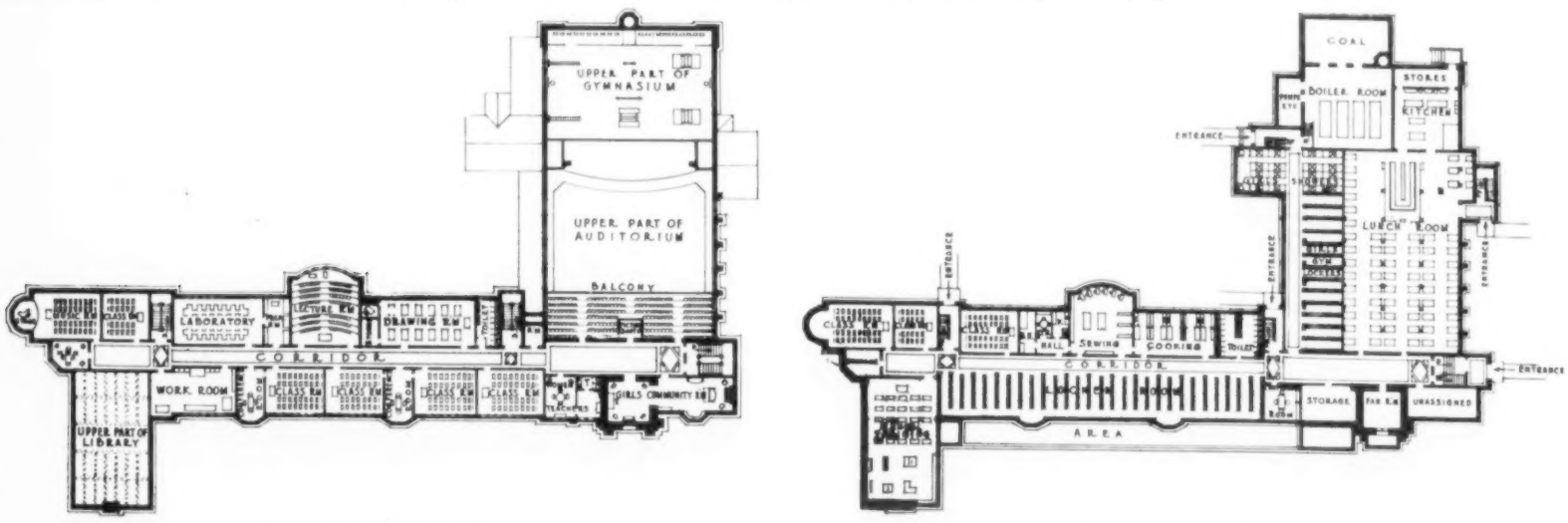
The offices in a normal school must be more extensive than in a high school, as there are not only the regular force and the principal to be taken care of, but there are the various supervisors who have no permanent classrooms, but who must have offices. There must also be reception rooms for the receiving of visiting superintendents of schools, who come to the normal schools in search of teachers for their respective communities. These superintendents must have facilities to not only see the student teachers at work, but to interview them with a view of engaging their services.

The normal school serves a very large district, pupils commuting by train and trolleys from a considerable distance. This means that a lunch room and kitchen is necessary and of very much more importance than in the high school, where the students are from the immediate neighborhood. Practically one hundred per cent of the students eat lunch in the lunch room of a normal school, or if they bring their lunch from home, they will at least purchase part of their lunch at the school. It is not always possible to seat all the students at one time in the lunch room, but it is desirable to do so if it can be arranged, otherwise two shifts are provided.

The auditorium serves no different function in a normal school than it does in the average high school. In size it is at least large enough to accommodate the student body. The combination of the auditorium and stage gymnasium works especially well in a normal school on account of the large audiences at certain periods of the year, and also on account of the exhibitions and entertainments given by the normal school pupils during the year.

Somewhat more emphasis is placed upon the physical training department than in the high school, which means that more attention should be given to the design of the gymnasium and its accessories. The gymnasium is usually the standard dimension; that is 50 feet by 80 feet. It has its instructors' rooms, apparatus storage rooms, and convenient locker and shower rooms. This gymnasium serves not only to keep the pupils in a physically fit condition, but serves to turn out physical training instructors and supervisors for the public schools.

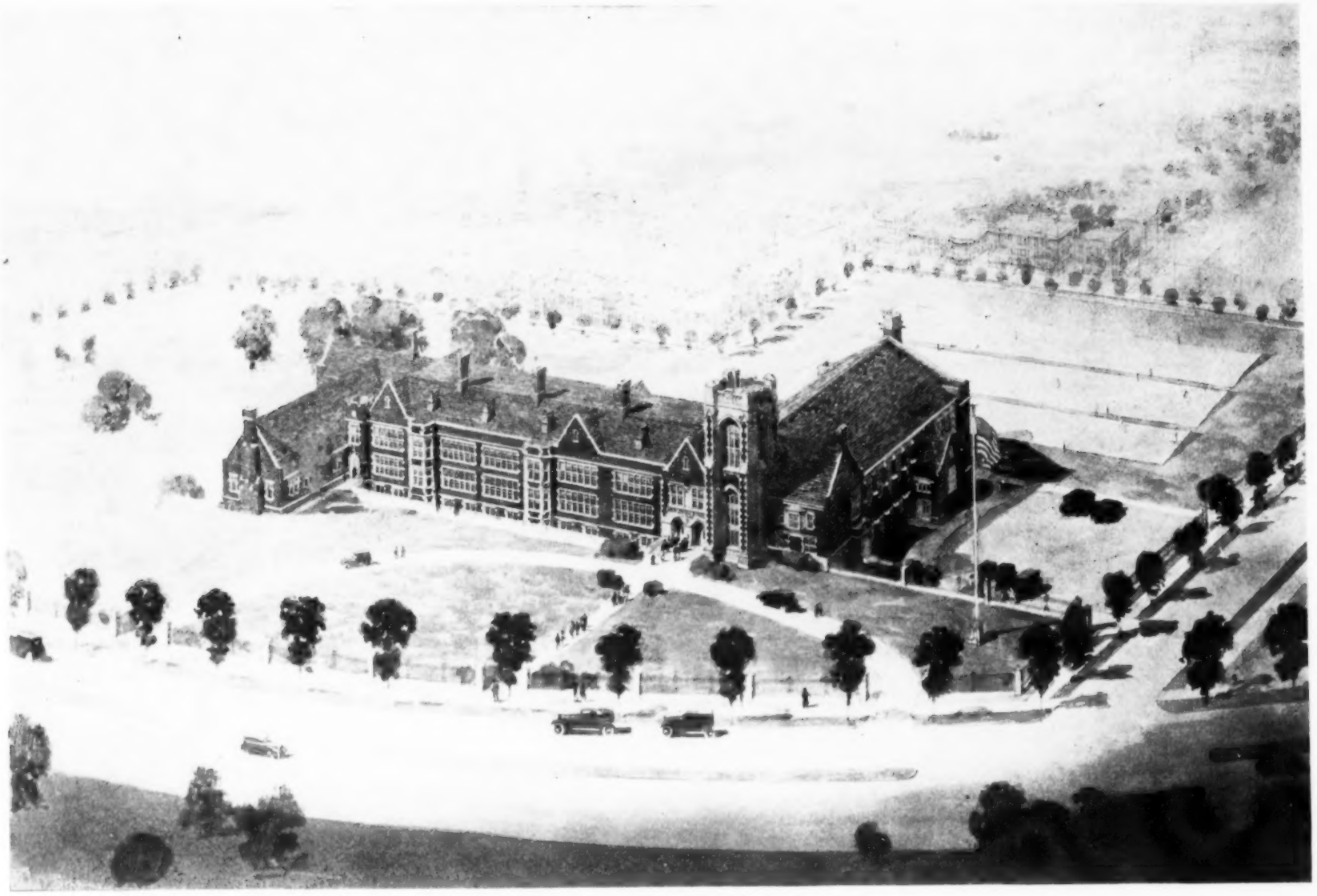
Adjoining the main gymnasium is a smaller exercise room, used for corrective gymnastic work. This is not only used for the corrective work in connection with the pupils in the normal school, but for demonstration and instruction in corrective work for the students in the physical training courses. There is also a physical examination room connected with the instructors' dressing room, and very often the medical inspection room and the girls' rest room are all arranged in this part of the building.



SECOND FLOOR PLAN.

BASEMENT PLAN.

FLOOR PLANS, JERSEY CITY STATE NORMAL SCHOOL. Guilbert & Betelle, Architects, Newark, N. J.



AIR-PLANE PERSPECTIVE, JERSEY CITY STATE NORMAL SCHOOL, JERSEY CITY, N. J.

Guilbert & Betelle, Architects, Newark, N. J.

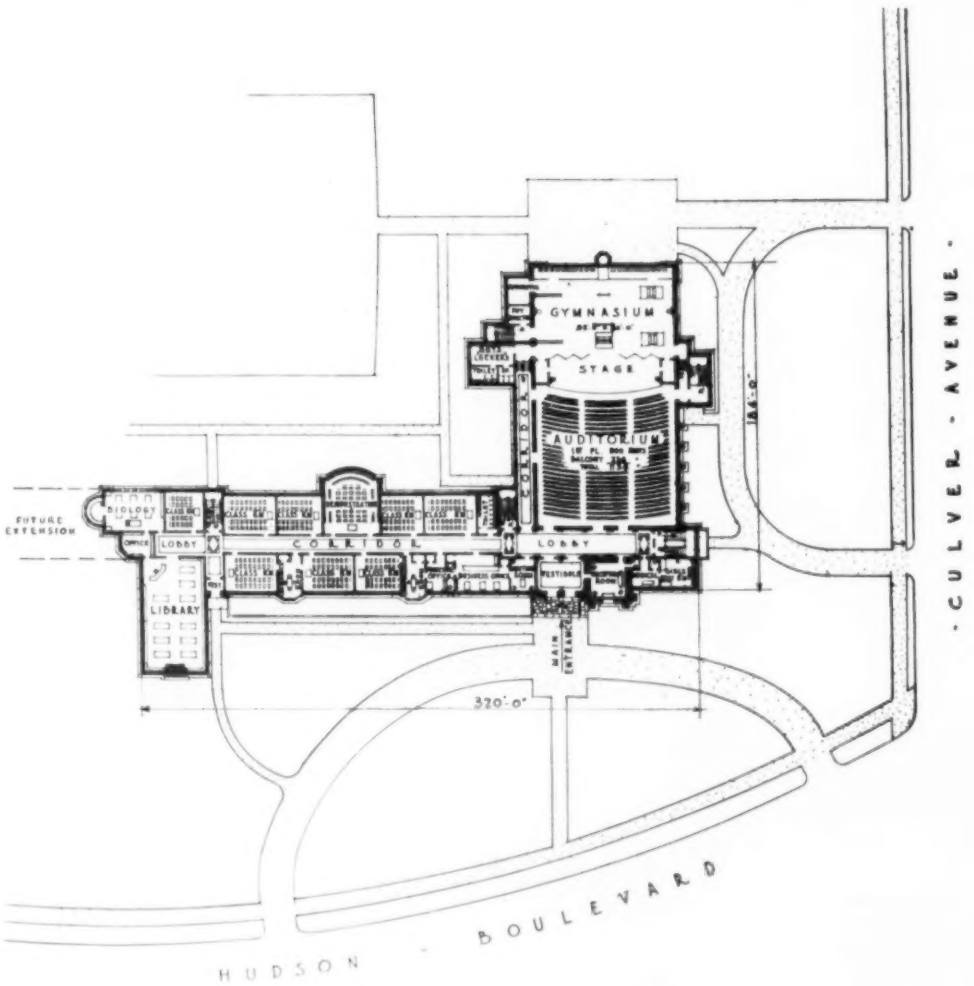
If the normal school in question has no classrooms provided for permanent practice teaching in connection with it, there is at least provided a large demonstration room arranged in amphitheater form with a space in the center sufficiently large for a class of grade school pupils. In this arrangement a class is brought in from one of the neighboring public schools and the supervisors demonstrate various teaching methods before the class of normal school pupils who are seated on the raised platforms of the amphitheater.

A large art room is necessary, as instructors in freehand drawing for the primary grades are trained in this type of school. In connection with the art room is a smaller room adjoining where modeling and other allied arts are taught.

If manual training is part of the course, the manual training room is equipped with the simplest of furniture. As most of the students are girls very little work is possible, and what is done is practically all bench work, with the machines, such as lathes, saws, planers, etc., being omitted.

In rural communities, it may be advisable to include an agricultural course, and this will mean an agricultural laboratory fitted with tables, similar to chemical laboratory tables, and cases for the storing of all kinds of samples of grain, fertilizer, etc. There is often another room with plain brick walls and cement floor with a drain in the center, where all kinds of rough work can be done, such as mixing soils of various characters, and the bringing in of live stock for examination, etc. A large store room is also necessary for the farming implements of various sizes, which are only used periodically, such as churns, cream separators, chicken brooders, etc.

In connection with the theoretical work in agriculture carried on in the school building,



MAIN FLOOR PLAN, JERSEY CITY STATE NORMAL SCHOOL.
Guilbert & Betelle, Architects, Newark, N. J.

it is practically impossible to carry on a course such as this without a large greenhouse and a demonstration garden or farm, which means a considerable sized piece of property for the school building. The agricultural course is taken up principally by the men pupils.

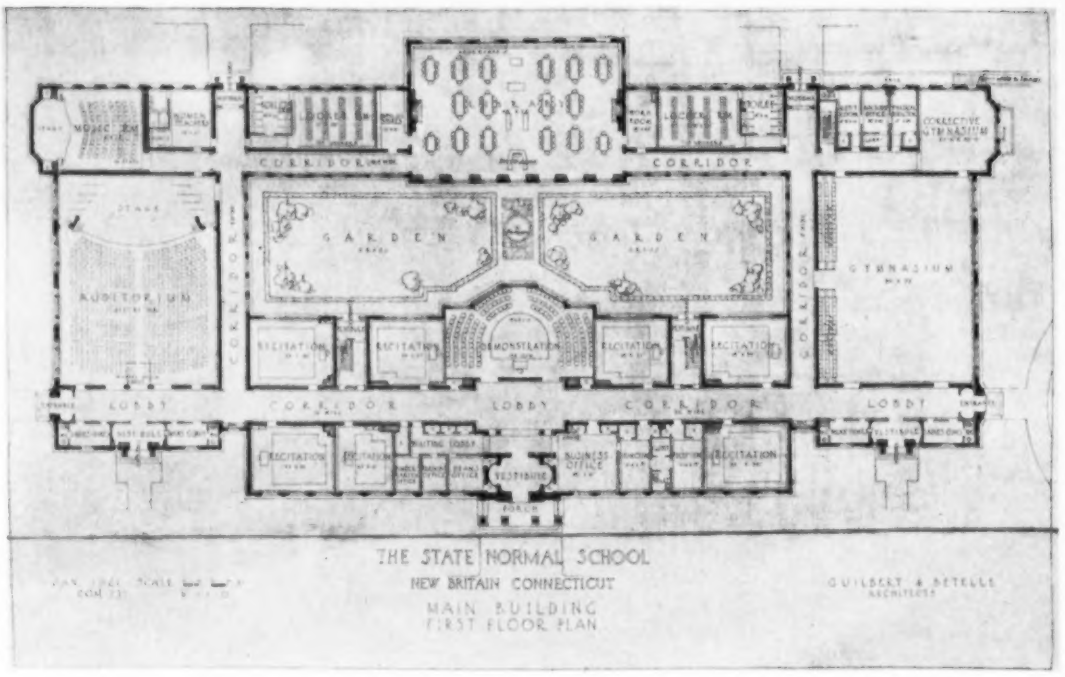
In many normal schools, domestic science is taught to pupils who wish to specialize in this subject. The arrangement of the domestic science department does not differ greatly from the usual domestic science department in a high school, there being the standard domestic science stoves, tables, sinks, etc., together with a model dining room, and also a sewing room equipped similar to a high school sewing room.

The standard classrooms for teaching such academic subjects as English, etc., are no different from the standard classrooms in any ordinary school building, and their number and size depend upon the number of pupils to be accommodated, with usually a maximum of thirty pupils to a classroom.

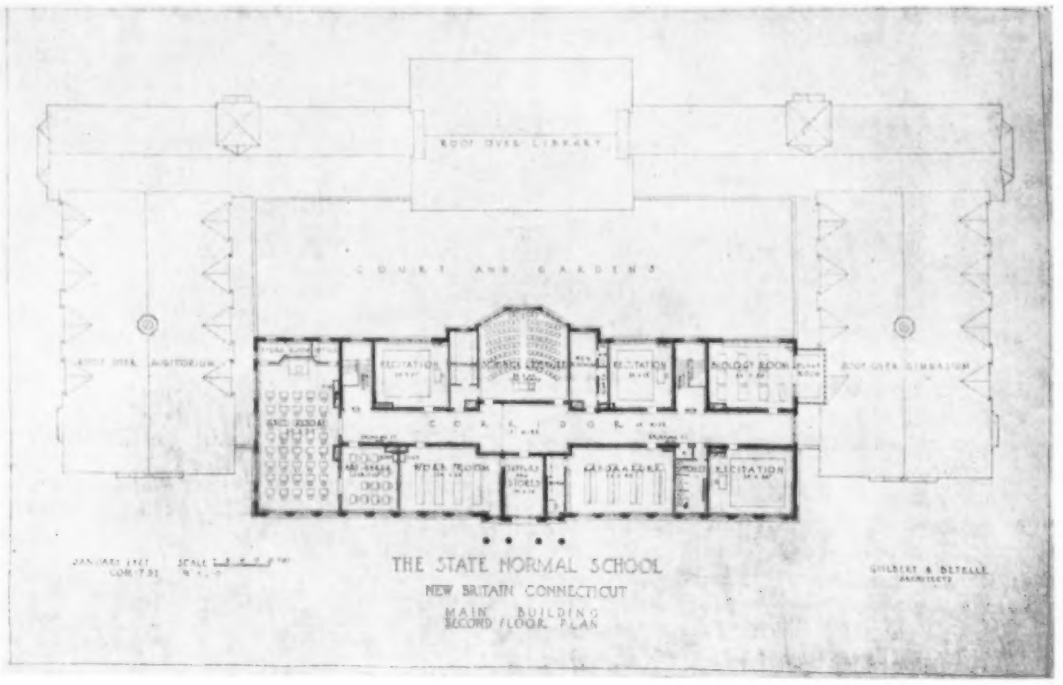
A room that is not usually provided in a high school building but very useful in a normal school is a community room. In a normal school the social side of education is given more emphasis and the community room is of real educational value in that it gives the students practice in the social graces and at the same time makes them more comfortable among strangers or in large gatherings. This room is furnished in a comfortable and attractive way similar to a living room in a private house. It serves the further purpose of being a meeting place for the school social clubs, literary societies, and other similar bodies.

A normal school building located in a large city needs no dormitory, as the pupils all live within commuting distance. But many normal schools are located in suburban towns where at least a portion of the student body comes from a distance so great that commuting is not possible, and local boarding facilities are limited. In such cases dormitories are necessary and a great many normal schools have dormitories connected with them. Educational authorities claim that the dormitories are of a great deal more use than simply making a certain number of pupils more comfortable, because they permit longer school hours, and thereby the school building is used in a more intensive way. Furthermore, they exert an influence over the students that is of the greatest value in their teaching career and later on in life.

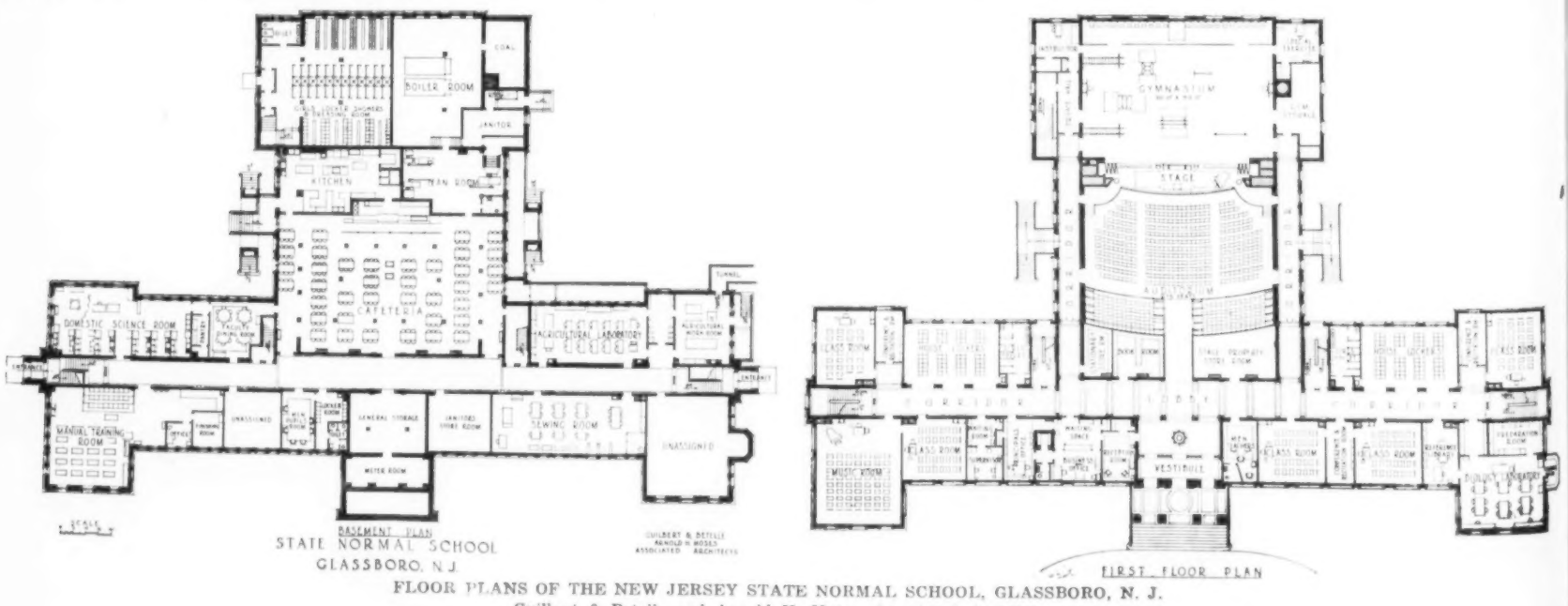
In exterior appearance a normal school should look like an educational institution, and as it is a school for the higher education it should be treated with at least the dignity of a high school, and closely approach the dignity of a college building. Needless to say, it should be built of the most substantial materials, and be an example for the buildings erected by individuals by being in good taste and having such proportions and design that it will compel the respect to which it is entitled from the passerby. The style of architecture should conform to the traditions of the locality in which it is built, and if the location has no special traditions it should be designed to meet the requirements and to express a building of an educational character.



FIRST FLOOR PLAN, CONNECTICUT STATE NORMAL SCHOOL, NEW BRITAIN, CONN.
Guilbert & Betelle, Architects, Newark, N. J.



SECOND FLOOR PLAN, CONNECTICUT STATE NORMAL SCHOOL, NEW BRITAIN, CONN.
Guilbert & Betelle, Architects, Newark, N. J.



FLOOR PLANS OF THE NEW JERSEY STATE NORMAL SCHOOL, GLASSBORO, N. J.
Guilbert & Betelle and Arnold H. Moses, Associated Architects.

GENERAL VIEW.

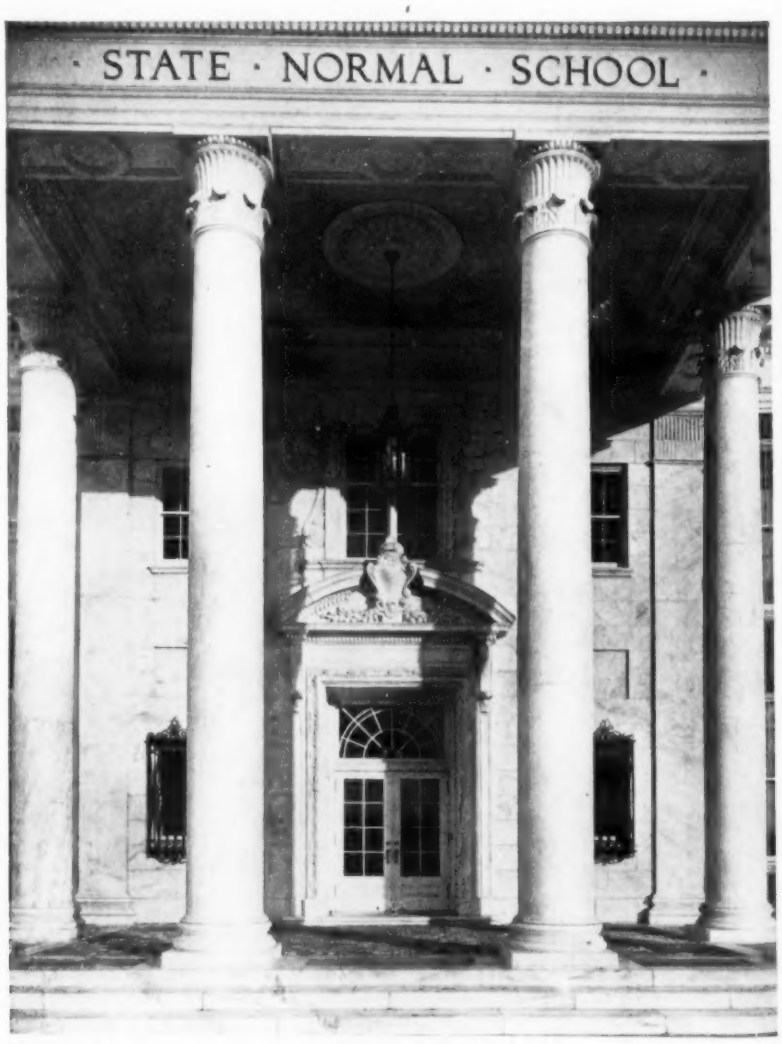
AUDITORIUM.

NEW JERSEY STATE NORMAL SCHOOL, GLASSBORO, N. J.

Guilbert & Betelle and Arnold H. Moses, Associated Architects.

AUDITORIUM, CONNECTICUT STATE NORMAL SCHOOL, NEW BRITAIN, CONN.

MAIN PORTICO, NEW JERSEY STATE NORMAL SCHOOL, GLASSBORO, N. J.



MAIN PORTICO, CONNECTICUT STATE NORMAL SCHOOL, NEW BRITAIN, CONN.

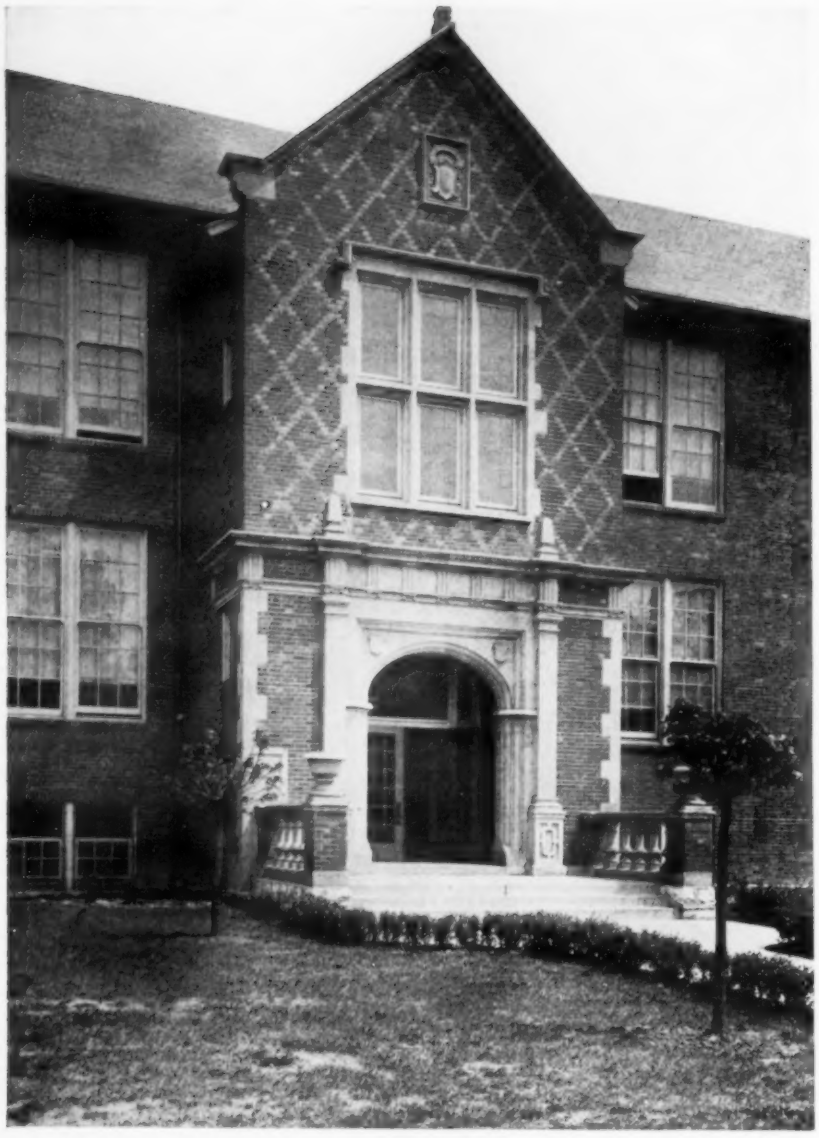
Guilbert & Betelle, Architects, Newark, N. J.

GENERAL VIEW.

DETAIL OF GYMNASIUM ENTRANCE.

CONNECTICUT STATE NORMAL SCHOOL, NEW BRITAIN, CONN.

Guilbert & Betelle, Architects, Newark, N. J.



ENTRANCE DETAIL OF THE BRISTOL SCHOOL,
WEBSTER GROVES, MO.

ENTRANCE DETAIL OF THE KIRKWOOD HIGH SCHOOL,
KIRKWOOD, MO.

BRISTOL SCHOOL, WEBSTER GROVES, MO.

WM. B. ITTNER, ARCHITECT, ST. LOUIS, MO.

(See Pages 39-42.)

How a School District Can Obtain the Best Price for Its Bonds

Tom K. Smith, Member of the Municipal Securities' Committee of the Investment Bankers' Association of America.

Obtaining money most advantageously, to meet the continually-expanding needs of the schools for new buildings and equipment, is one of the biggest problems in almost every school district. Periodically, the school board faces the necessity of buying land and erecting new school buildings. To obtain money for this purpose, usually, it must borrow. To borrow, it is customary and most practicable to issue bonds. Consequently, every school board periodically puts to itself this question:

"How can we get the best price for our bonds? Are there practices in issuing bonds that will enable us to get a better price for our bonds and thus save money for the district?"

The Answer to the Board's Big Problem

There are certain well-defined practices for school bond issues, as well as for other civil loans, that will enable a school district to obtain a better price for its bonds. These practices have been determined by many years of experience. They cost the school district nothing to apply. They are nothing more than plain, simple, common sense rules that have been worked out through a long period of school and other forms of civil, or municipal, financing. The effect of these practices is to make the bonds more attractive and desirable to the investor. Buyers of school bonds are no different from buyers of anything else; they pay the best price for what is most attractive to them. Hence if the school board can make its bonds more attractive to buyers and thus command a better price for the bonds, there is every reason why the board should seek to follow the sound and simple practices that will produce such a result. These practices may be briefly outlined under the following:

1. The arrangement of the maturity of the bonds—whether serial or term issues.
2. The place of payment of interest and principal.
3. The denomination and registerability of the bonds.
4. The length of time the issue is to run.
5. The purpose of the issue.
6. The tax and debt limits.
7. The physical appearance of the bonds.

In considering the first of these divisions, the arrangement of the maturity of the bonds, there are two plans which are chiefly in use. They are the serial maturity plan and the term plan. In serial maturities a certain number of the bonds come due each year. In the term plan all the bonds mature at one time and usually are to be retired by a sinking fund to be accumulated through the period the bonds are outstanding. The term plan is the older and was in general use up to a decade ago. The development of the serial plan, however, has brought so many advantages that it has practically supplanted the term plan. A number of states require that school and various civil loan bonds be issued serially.

Serial Maturities Save Taxes and Make a Stronger Bond

The serial maturity makes it possible for the school district to compute with certainty the amount needed each year for interest and to retire the bonds that come due in that year. At the time the bonds are issued the maturities can be so arranged that the total annual requirement for principal and interest is uniform. At the end of this article is a table showing how a serial issue of $1,000,000 of five per cent bonds maturing in one to twenty years may

MR. TOM K. SMITH, ST. LOUIS, MO.

require practically the same amount each year.

The advantages of the serial maturity over the term maturity bond issue may be summed up as follows:

First, buyers prefer serial issues because they are more economical and sounder for the borrower. Second, the borrower saves a considerable portion of interest money by issuing serial instead of term bonds. In the $1,000,000 issue, running one to twenty years at five per cent, to which I refer in the preceding paragraph and in the table at the end of this article, the serial plan saves the borrower $395,350 in interest. If this million dollars' worth of bonds all ran through the full twenty years of the issue, as under the term plan, they would bear, in twenty years at the rate of five per cent, $1,000,000 in interest. But under the serial plan, by retiring a certain number of the bonds each year, at the end of twenty years the amount of interest paid out would amount to $604,650.

Further, there is sometimes difficulty in efficiently managing a sinking fund, created to redeem a term issue of bonds. There is always the possibility that losses, accidents or inexperience of succeeding officers may waste or misappropriate, with the best intentions, sinking fund moneys. However, there is little likelihood that taxes collected to pay interest and retire a certain number of serial bonds within a short while may be confused with current funds or put to other uses. Hence, while the serial maturity plan results in a big saving to the school district and its taxpayers, it also is most favored by bond buyers because the bond issue is thus protected from incompetent or possibly corrupt public officials in years to come.

Where sinking funds have been found insufficient to redeem an issue of bonds when due, it frequently has been found that the authorities in charge have at various times drawn on the sinking funds for other uses. Although these improper drafts on sinking funds often have been with honest intentions and solely for public purposes, they have depleted sinking funds just as surely as if they were dishonest. Usually this converting of sinking funds is done with the intention of paying the money back before the bonds mature, but quite often there are no available funds with which to repay the sinking fund.

The Place of Payment

The place where the bonds and coupons are payable may seem a small and unimportant detail. That is an error. It is very important, carrying with it the opportunity to save or lose some hundreds or thousands of dollars for the school district, according to the size of the issue. It is, again, a part of the process of making the bonds most attractive to the buyer. Usually the buyer lives in or near or has business connections in some financial center. He desires the bonds and the interest coupons paid in that center, and he is willing to pay for that privilege. He pays for it by paying a higher price for the bonds.

City banks, of course, charge a fee for acting as paying agent for the school district. The charge is usually one-fourth of one per cent on interest paid and one-eighth of one per cent on principal, which is a very small charge for the service rendered. Yet, small as the fee is, it sometimes brings strenuous objections from school boards. I have known officials to hint that the bond houses were in league with the banks in the collecting of this trifling fee. Such a suggestion, of course, is untrue and ridiculous. The investor who buys the bonds knows that if the bonds and coupons are payable in some financial center he can collect them at his bank at par. If, however, the investor has to send his coupons to some rural community or small city for collection he knows his bank will charge him for collecting them. Consequently, the investor will pay a higher price for bonds payable in some financial center than for equally as good bonds payable elsewhere. The school district makes money by catering to this demand of the investor, making the bonds payable in a financial center, paying a fee to the bank and thus getting a higher price for its bonds.

A Needless Source of Difficulties

Also, it may seem practicable to the school board to make the bonds and coupons payable in two places, usually in the home town or county seat and in some financial center. This practice of dual place of payment is one of the most prolific causes of trouble and often results in injury to the credit of the school district or borrowing community. If more than one place of payment is designated, full credit must be provided at each place at every interest payment in order to insure prompt payment, since the treasurer has no means of knowing at which place the coupons will be presented for payment.

At this point may I draw on the experience of twenty years in handling school and municipal bonds to stress the vital importance that the school board should keep in mind these seemingly unimportant details if it is to maintain a high credit standing and thus obtain the best price for its bonds. Sometimes the members of school boards, giving their valuable time and service to the community without reward, may forget that it is necessary that the district maintain its credit standing as well as attain it. Although the money is ready and waiting to be paid, sometimes officials or others neglect promptly to send it to the place of payment. Then, when the coupon holder presents his coupon, payment is refused for want of funds. The district at once gets a mark of disfavor in the eyes of those coupon holders.

Little Details of Big Importance

Money for interest or principal should be sent several days before the due date so that, if it goes to a large bank, there is ample time for it to reach the paying cage on time. It is little things such as this that sometimes cost school districts very materially. It is pretty certain that the average school district is going to issue

bonds periodically throughout the years to come. The population is increasing, and with that increase, there is a constant need for additional school quarters. Besides, the constant increase in the number of school children, educational subjects are continually being multiplied and require continually more buildings and equipment. With this certainty before it, requiring bond issues periodically in the future, the school district cannot afford to permit any small, or large, negligence that will injure its credit. In addition to making its issues attractive to bond buyers, it must keep them attractive by prompt payment of the obligations in every detail.

School bonds should be issued in denominations of $1,000, $500 or $100. It is usually preferable that they be issued in $1,000 denominations. Odd amounts should never be issued. The majority of buyers of school bonds are banks, life insurance companies, fraternal orders, trustees, and large investors. These buyers prefer the $1,000 denomination. That denomination is the usual unit in the bond business. In fact, when reference is made to a bond in bond houses or banks or among investors "a bond" is tacitly understood to mean a bond of $1,000 denomination. Coupon bonds are usually issued. In the case of large issues it is sometimes of value to offer the privilege of registration. The marketability of such issues may also be increased by making it possible for the bond holder to exchange registered bonds for coupon bonds on payment of a nominal fee.

Coupon Rate and Length of the Issue

The coupon rate which the bonds should bear should be determined by the market. It should be fixed so that the bonds may be retailed at par. This is of dollars-and-cents importance to the school district selling the bonds. Bonds having an excessive premium or discount will not bring as good a price as those offered at par.

The term of life of an issue should conform somewhat to the character of the improvement. Bonds issued to construct a fireproof school building can reasonably be extended through a period of twenty or twenty-five years. If, however, the board wishes to issue bonds on some short-lived improvement, it cannot expect to receive the best price for bonds that extend beyond the life of the improvement.

There need be little said on the "purpose" for which school bonds are issued. Usually they are issued to enable districts, to acquire sites, erect and equip buildings, and make improvements, extensions, and repairs. Every dollar of bonds issued should add a proportionate amount to the district's property holdings. School bonds occupy an enviable position as an investment security because they generally are issued to acquire permanent improvements which provide a social necessity, the education of youth, which the community will eagerly support. So long as the district issues school bonds for this purpose its credit is thus improved. But in many states school boards can issue bonds for funding warrants and other obligations that have been incurred in current operations of the schools. Current expenses should be paid by current income from taxes. If taxes are insufficient to pay current operating expenses, the remedy is an increase in levies and not by increasing the debt and deferring it with a bond issue. Also, there is opportunity of wide latitude as to what constitutes repairs and at times school boards have followed the unsound practice of paying for socalled repairs with bond issues, or a part of a bond issue, when the "repairs" properly should have been charged to operating expenses. Ordinarily the common sense of the citizens will prevent the authorizing of debt for non-essentials, but once in a while something will get by them. If the school board goes beyond the sound and accepted usages and purposes for school bond issues, it at once injures its own credit and that of the community of which it is a part.

The Heart of the Bond Issue

School bonds should be payable from unlimited tax levies. In some states there is a definite mill limit; in most states there is not. There should be a debt limit rather than a tax rate limit on school bonds, or other civil bond issues. By this I mean that the district's authority to create debt and to levy taxes to pay debt should be held in check, by specifically stating the maximum debt the district can create. But within this debt limit there should be no restrictions on the district in levying taxes to the full extent necessary to pay the debt created within the authorized debt limit. In no other way can the district expect to obtain the best price for its bonds.

Inadequate tax levies are a source of trouble and very frequently they are due to nothing more than faulty arithmetic. In its resolutions authorizing a bond issue, and the tax levy to pay the bonds and interest, the school board should be meticulous lest some little error or oversight creep in. The levy should provide for the principal and interest which mature each year and for an ample margin—say ten per cent—to cover casual delinquencies. Failure to make the levy sufficient may be wholly a matter of carelessness or mechanical error, but it is just about as damaging to the credit of the school district as if it were made with full intent.

Provision for the First Coupon

Sometimes the first interest coupon on an issue of bonds becomes due before the proceeds of the next annual tax levy can become available. Proper provision for payment of this first coupon must be made, as well as for subsequent coupons. For example, the first coupon may be paid out of the proceeds of the bond issue, out of the general or other funds. But if the first coupon is so paid, arrangement should be made to repay to the funds received from the bond issue or to other funds, the amount taken to pay the first coupon. This should be arranged in fixing the first annual tax levy so that the levy will take care of the payment of the first coupon and provide for paying the interest and the principal maturing during the year. Unless this is carefully considered there may possibly be a deficit on subsequent interest dates with resulting injury to the district's credit.

Table of Annual Interest and Principal Payments Required in a Serial Issue of $1,000,000 of Bonds at Five Per Cent to Retire the Bonds at the End of Twenty Years by Uniform Annual Payments

Year	Principal	Interest	Total Requirement
First	$ 30,000	$ 50,000	$ 80,000
Second	32,000	48,500	80,500
Third	33,000	46,900	79,900
Fourth	35,000	45,250	80,250
Fifth	37,000	43,500	80,500
Sixth	39,000	41,650	80,650
Seventh	40,000	39,700	79,700
Eighth	43,000	37,700	80,700
Ninth	45,000	35,550	80,550
Tenth	47,000	33,300	80,300
Eleventh	49,000	30,950	79,950
Twelfth	52,000	28,500	80,500
Thirteenth	54,000	25,900	79,900
Fourteenth	57,000	23,200	80,200
Fifteenth	60,000	20,350	80,350
Sixteenth	63,000	17,350	80,350
Seventeenth	66,000	14,200	80,200
Eighteenth	69,000	10,900	79,900
Nineteenth	73,000	7,450	80,450
Twentieth	76,000	3,800	79,800
	$1,000,000	$604,650	$1,604,650

The physical appearance of the bond has some material bearing on the price it will bring. Fortunately, it is possible to obtain at small cost engraved bond forms that are attractive in appearance and that provide the important protection against counterfeiting. Bond and coupons should be prepared so that the place of payment and the due dates stand out clearly.

It is also very important that the interest on bonds be made payable semi-annually. That is the custom. Investors demand it and it is to the advantage of the borrower to comply.

The following table, which was mentioned in an early paragraph of this discussion, shows an arrangement of a serial bond issue for $1,000,000 at five per cent, running through twenty years. The first year $30,000 of the bonds become due and with the interest of $50,000 require a total of $80,000. The second year a larger portion of the bonds become due, but the interest charge is less because of $30,000 of the bonds having been retired the previous year and so only

(Concluded on Page 130)

AUDITORIUM OF THE THOS. L. HANDY JUNIOR HIGH SCHOOL, BAY CITY, MICH.
Perkins, Fellows & Hamilton, Architects, Chicago, Ill.

FRONT ELEVATION OF JUNIOR HIGH SCHOOL No. 3, TRENTON, N. J.

Ernest Sibley, Architect, Palisade, N. J.

School Building Program, Trenton, New Jersey

Ernest Sibley, Architect, Palisade, N. J.

The school building program for the City of Trenton, New Jersey, was formulated after a comprehensive study of the educational needs of the community.

A forward-looking superintendent of schools, board of education, and citizenry made it possible to launch a program of such magnitude that the problem of proper school accommodations for the children of the city is rapidly being solved. Space and facilities are being provided to accomplish the objectives of the Trenton school system, and rich educational opportunities are offered.

The Lincoln School

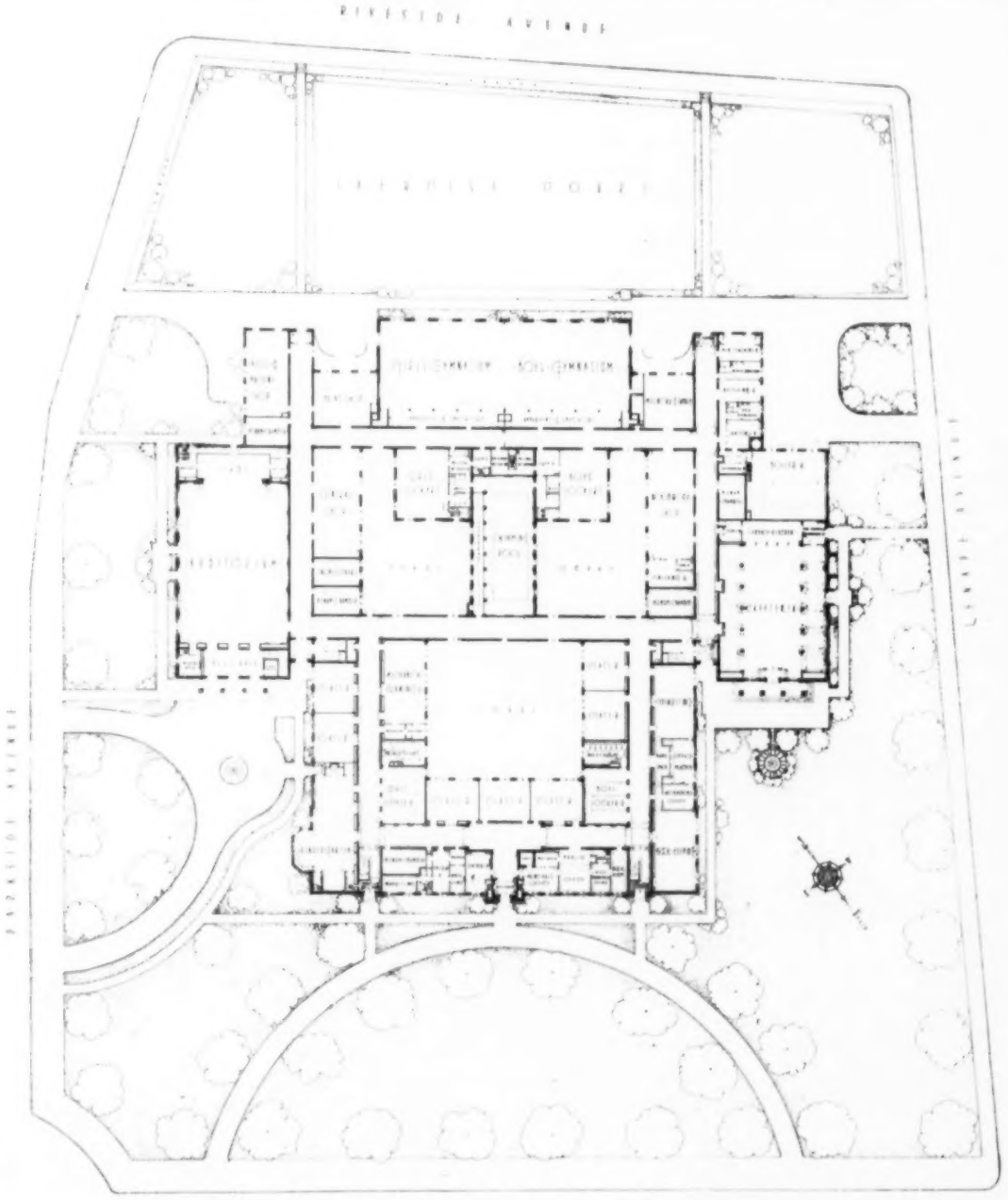
In order that the poorest school buildings in the city could be abandoned at the earliest possible time, the adopted building program called for the erection, first, of a school for negro children. This was called the Lincoln School, and was erected on North Montgomery Street, near Brunswick Avenue. The building was formally opened early in 1924, and administration of the institution along smooth-working and effective lines was rapidly accomplished.

The principal and the staff of this building, all highly trained and efficient, are enthusiastic over the building and its effect upon the habits of the pupils who occupy it. Their pride in the building seems to prevent any tendency toward defacement or disorder, and the custodian reports the pupils seem to want to "live up to" their new school home.

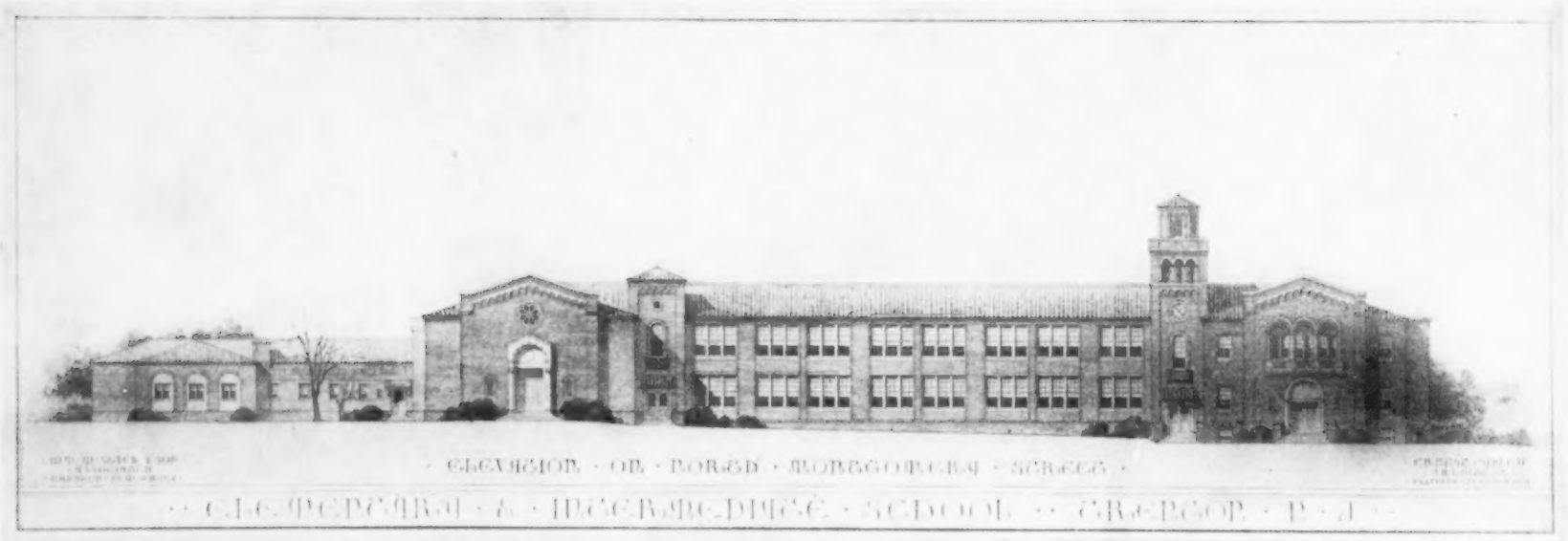
The building accommodates nine grades, and has a capacity of 1,200. It provides accommodations for the greater number of the negro children of the city. Some who live in districts remote from the institution, will continue to attend schools in their immediate localities.

The plot was of such size and shape as to make necessary an irregular-shaped plan. At the rear of the pool wing is an athletic field of about seven and one-half acres. The slope of the ground made it possible to secure shops above grade, at the lower end of the building. The entire building program called for the elimination of basement rooms, excepting for heating system and fuel rooms.

The Lincoln school is two stories high, and is planned for an extension to the rear. In creating the design for this school, the racial characteristics of the negro were taken into consideration. The negro is naturally religious and romantic, so a romantic style of architecture was adopted, and the auditorium designed to resemble a chapel. It is built of brick in red and brown tones, selected to give the building an appearance of age. The trim is limestone and the roof of Italian tile. The corridors and stairways are wainscoted with an old blue faience tile, with built-in lockers of the



FLOOR PLAN, JUNIOR HIGH SCHOOL No. 3, TRENTON, N. J. Ernest Sibley, Architect, Palisade, N. J.



FRONT ELEVATION, LINCOLN ELEMENTARY AND INTERMEDIATE SCHOOL, TRENTON, N. J.
Ernest Sibley, Architect, Palisade, N. J.

same shade of blue. The floors are of "battleship" linoleum, with terrazzo border and base.

The auditorium walls are decorated with colored faience tile inserted in rough plaster walls painted a warm putty color. The stage and windows are draped with gold trimmed velvet curtains, in shades blending with the decorative tile. The back of the stage opens into a gymnasium, for pageant and similar purposes.

The first grade rooms and kindergarten have exits direct to playgrounds.

A separate entrance and corridor have been provided for the physical training department.

The auditorium and physical training department are self-contained units for public use.

On the second floor, above the administration wing, will be found the cafeteria and the homemaking department.

The swimming pool is regulation size, and is of mosaic tile; the pool itself of white tile, and the walks and wainscoting in colors of deep buff, brown and maroon.

The floor construction is a combination of tile and reinforced concrete. The roof is steel construction with "metal lumber" rafters, over which "Hyrib" and nailing concrete is placed as a base for tile roof.

The heating and ventilating of the auditorium and gymnasium is by means of a plenum system, with direct radiation. All other rooms have the unit system.

Cost	$558,000
No. of pupils	1,200
Cost per cubic foot	40.33 cents
Instructional area	58.6%
Administration	12.5%
Other divisions	28.9%
	100.0%

Junior High School Building No. 3

This is the second of the buildings in the new school building program, to be completed, ready for occupancy.

It is situated on West State Street, on a beautiful plot of ground, formerly park land, and in one of the high-class, residential districts of the city.

From the rent the building looks across to the athletic field and the city park.

Overlooking the historic Delaware river at the rear are the double gymnasiums, with great arched windows extending to within three feet of the floor. The generous site permits an exercise court, 90′ 0″ x 350′ 0″, at one end of which is an open-air stage for outdoor theatricals.

The auditorium wing, and a corresponding wing on the westerly side, containing the cafeteria and household arts department, are set back 120 feet from the main facade of the building. In this way a pleasing architectural effect has been obtained, and the view of the nearby residents is not obstructed.

The historical background of Trenton suggested the type of design. The central tower and the two porticos are reminiscent of the simple, dignified, early Colonial work. The building is of red brick, with cut cast-stone trim and cornices, giving the character of old brick and marble buildings of the Colonial period of Maryland and Virginia. One of the features of the plan is the continuous corridor circulation in two loops, simplifying administration.

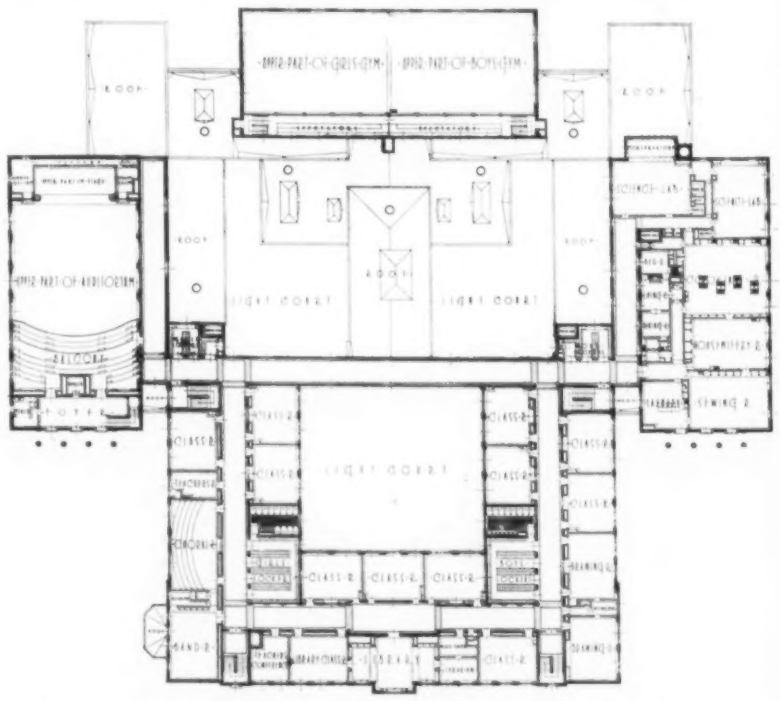
The auditorium on the first floor, together with its vestibule, second floor foyer, men and women's retiring rooms, stage and dressing rooms, is a complete unit in itself. This great room is one of architectural dignity and beauty. The entire floor is of linoleum with a painted wood wainscot around the entire room. The plaster walls above are treated with pilasters, surmounted by a rich cornice and a coffered ceiling, enriched with rope and bead ornaments. The stage and great arched windows are draped with green velvet curtains, trimmed in gold. The secondary valances and cyclorama curtains on the stage are golden buff. The entire color scheme will be warm gray and green, trimmed with gold.

The cafeteria on the first floor is in a wing corresponding to the auditorium, and is 18 inches below the general first-floor level, permitting the high ceiling desirable in so large a room. The room is especially adaptable to public banquets, and its finish and lighting equipment make it a room of unusual charm.

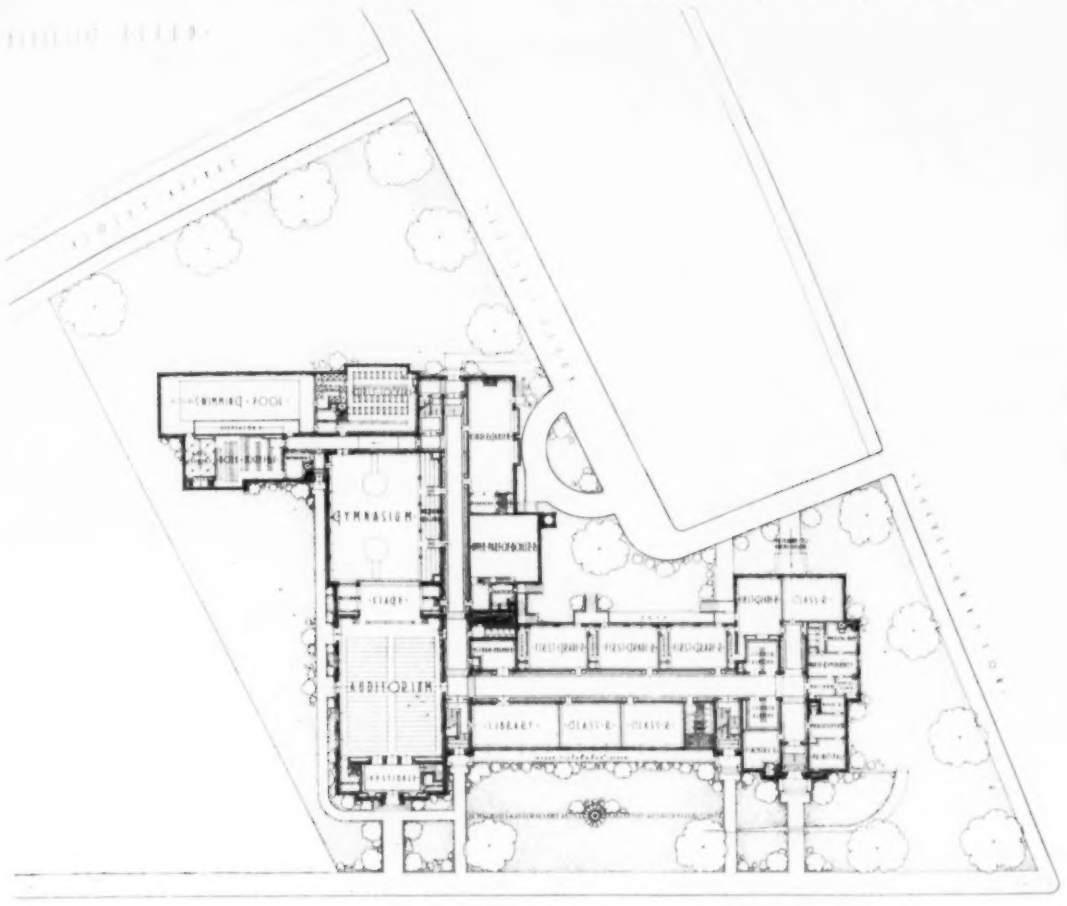
The gymnasiums are well arranged for community activities, with direct exits to a promenade at the rear.

One of the feature rooms on the first floor is the swimming pool. The walls of the pool are of white, mosaic tile, and the walks and wainscoting are in colors of green and gray. The walls above the wainscot and the vaulted ceiling are of rough plaster. Space is provided for spectators on one of the long sides, separated from the main room by an arched colonnade, with a corresponding treatment on the opposite wall of flat pilasters and arches above.

SECOND FLOOR PLAN, LINCOLN ELEMENTARY AND INTERMEDIATE SCHOOL, TRENTON, N. J.



SECOND FLOOR PLAN OF JUNIOR HIGH SCHOOL No. 3, TRENTON, N. J.



FIRST FLOOR PLAN, LINCOLN ELEMENTARY AND JUNIOR HIGH SCHOOL, TRENTON, N. J.
Ernest Sibley, Architect, Palisade, N. J.

On the second floor, over the cafeteria, is the household arts department. Opening off the corridor is the model suite, containing a completely furnished living apartment.

The library is located on the second floor at the center front. The central portion of the room, which is in the tower, is treated with a high vaulted ceiling, framing the great paladian window of the tower, and producing an impressive, dignified effect.

The building is planned around two courts, the swimming pool crossing the rear court. The front court has brick-paved walks, and both courts are to be planted with shrubs and vines—the low building permitting the penetration of ample sunlight.

A future extension will take the form of 25 classroom units around the rear court, with a part of this at the third floor level reserved for art rooms. The extension will not be visible from three sides, and will be entirely within the present building lines. Construction, steam fitting, conduits, etc., are already provided for the extension. The building provides a double kindergarten and several first-grade rooms for nearby elementary school children.

The corridors and stairways are wainscoted with a light buff faience tile, with bronze and light green shadings.

The corridor floors have a nine-foot width of one-fourth inch "battleship" linoleum, with terrazzo borders and base. The corridors are uniformly 12 feet wide, ceilings arched, and the spaces between corridor ceiling and second floor slab are used to distribute the heating and ventilating ducts. In addition to corridors, "battleship" linoleum is used for the floors of the auditorium, the library, the library classroom, the librarian's room, and the offices.

The heating system is a combination of direct-and-indirect steam. The ventilation is accomplished by means of five plenum chambers. The entire space under the first floor is used as pipe space.

The floor construction is a combination of tile-and-reinforced concrete. Roof construction, steel and "metal lumber," "Hyrib" and nailing concrete, as a base for slate roof on main roof, and built-up roofing on shops.

Cost	$995,170
No. of pupils	1,800
Cost per cubic foot	35.6 cents
Instructional area	58.6%
Administration	15.4%
Other divisions	26.0%
	100.0%

Junior High School Building No. 4

This building, the largest of the three new school buildings up to this time, is now under construction on Dayton Street, in an industrial section of the city.

The English Tudor style has been adopted for the design of this building. To secure added dignity, the central portion of the building was carried three stories in height. The three-story portion, however, is only one room deep. The exterior is of red brick with gray stone trimmings.

The wings on the building extend in front of the central facade and house respectively the auditorium and gymnasiums. Double gymnasiums are provided, with the swimming pool placed between them. In all gymnasiums and swimming pools ample provision has been made for spectators.

The same construction in general, and the same complete provision for all departments and for special rooms and equipment, has been made in this building, as in Junior High School No. 3. The site permits of a large athletic field, with football field, running track, tennis and basketball courts. Arrangement has been made, also, for the convenient handling of the spectators by means of grandstand, driveways and parking space.

The future extension of this building will also be entirely within the lines of the present building and will be visible only from the rear.

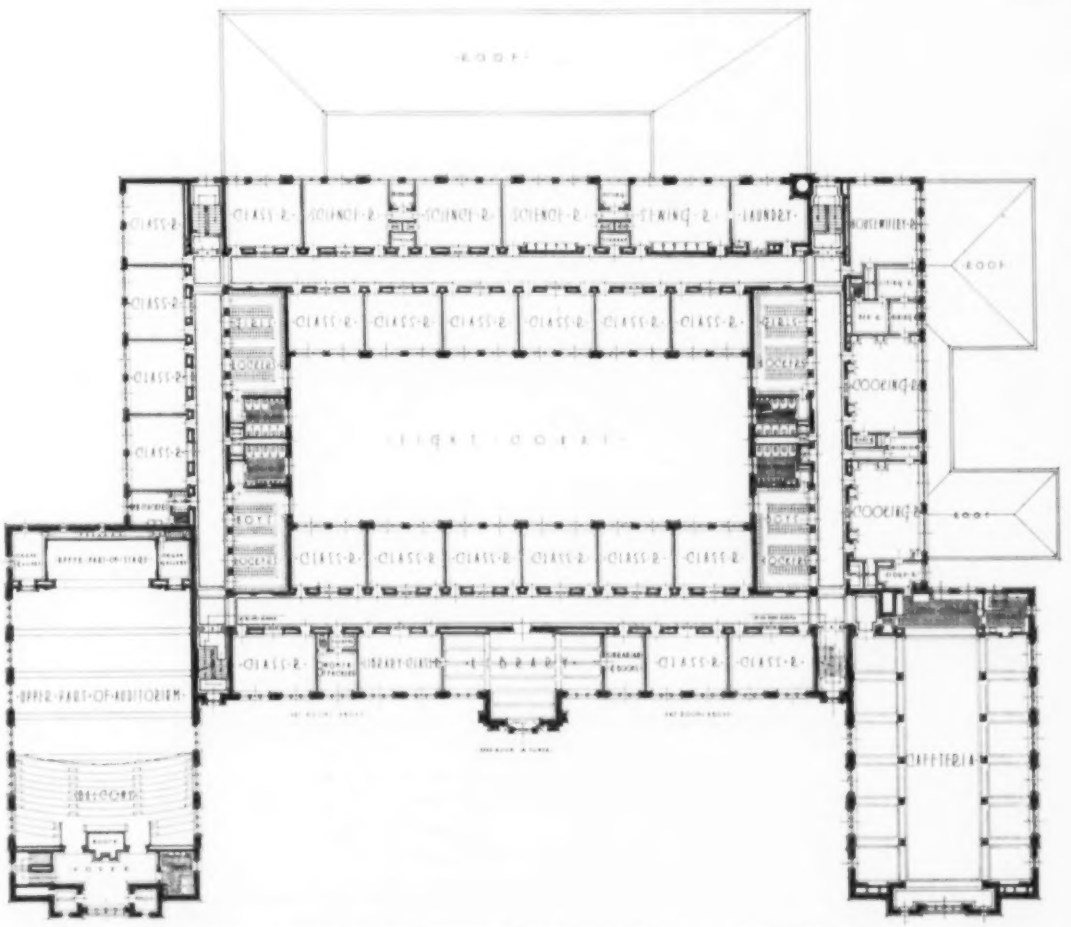
The heating system will be similar to that in Junior High School Building No. 3.

The wainscot in the swimming pool will be of faience tile, instead of mosaic, as in the other two schools.

The alcove locker scheme will be used as in Junior High School No. 3. The lockers are on a terrazzo base, and the floors are covered with linoleum. The toilets are entered from locker alcoves.

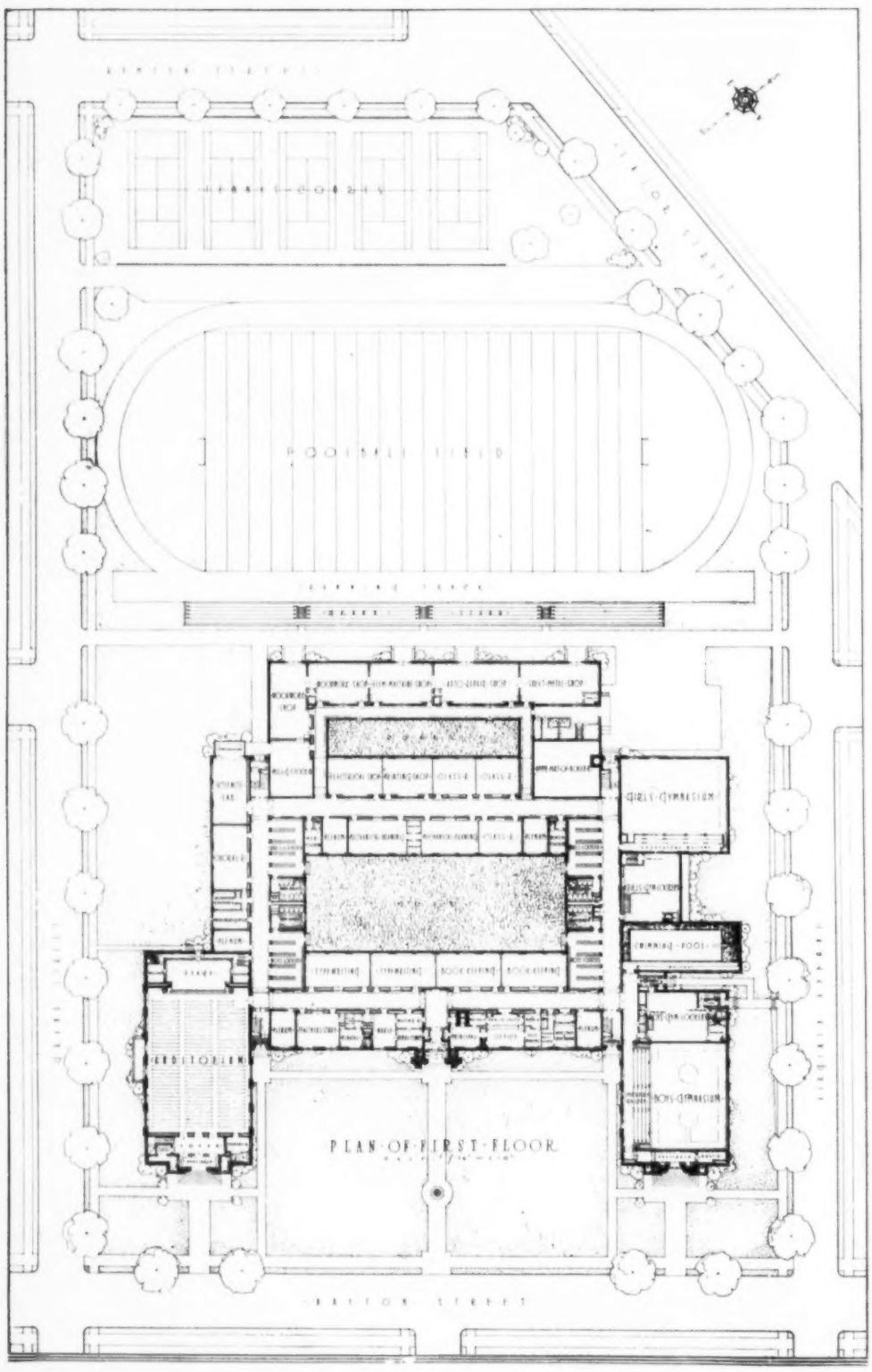
This building, on account of its location, is provided with more shops than the two other buildings.

Cost	$1,240,669
No. of pupils	2,200
Cost per cubic foot	36.9 cents
Instructional area	63.4%
Administration	14.1%
Other divisions	23.5%
	100.0%



SECOND FLOOR PLAN, JUNIOR HIGH SCHOOL No. 4, TRENTON, N. J.
Mr. Ernest Sibley, Architect, Palisade, N. J.

FRONT ELEVATION, JUNIOR HIGH SCHOOL No. 4, TRENTON, N. J. Ernest Sibley, Architect, Palisade, N. J.



FIRST FLOOR PLAN AND PLAT PLAN, JUNIOR HIGH SCHOOL No. 4, TRENTON, N. J.

GOING OVER THE HEADS OF RECOGNIZED AUTHORITY

A well ordered school system consists in an acceptance and adjustment of delegated authority. It is founded on the popular delegation of power of the many to the few and then organized into divisions with an order and sequence of powers, duties, and responsibilities.

Thus, the board of education, which is created through the voice of the community, becomes the supreme authority in the administration of a school system. In the nature of things it must delegate a part of that authority by making the superintendent the chief executive of the schools, who, by virture of his office, becomes the strong right arm that carries the policies of the central body into realization.

The plan of organization is so well established that no one needs, at this late day, it would seem, further light or instruction upon it. But, the infractions upon the plan or rather the failure to recognize proper authority come to light periodically and in many instances result in embarrassing situations.

The more common violations are found in the tendency of teachers to shoot over the heads of their principals by going directly to the superintendent, or ignoring the superintendent by carrying their tales to the board members. And when encouragement is given to these breaches in the recognition of delegated authority trouble is sure to follow.

An unpleasant situation recently arose in a Massachusetts city, where the superintendent, as it was clearly his duty, made the assignment of teachers to the several schools. Two of the teachers who sought, what they believed, more favorable assignments, went directly to board members to plead their case. These, in turn, ignored the superintendent and sought to make the assignments themselves.

The superintendent bravely contended that the assignment of teachers came clearly within his scope of authority and that to question the exercise of this authority was to render him unqualified for his post. He must either be allowed to fulfill his prescribed duty, if he was to be held responsible for the efficiency of the system, or be removed from further service.

To confer authority upon an executive and then to undermine that authority is destructive of good discipline and of ultimate efficiency in the school system. The mistake does not lie alone with the teacher, who goes over the head of the superintendent; but, also with the members of the board of education who countenance such a procedure.

A Score Card for Selecting the Site for a Consolidated School

L. W. Reese, Bowling Green, Ohio.

While engaged in rural school work it often became necessary for the writer to choose or help to choose school sites for consolidated school buildings. In this day of measuring devices it seems that we have overlooked the site-selecting and left the choosing of a site somewhat to general ideas of what a site should be as to location, sanitary conditions, and many other worth-while items. These items should not be vague generalities.

Quite frequently after fights have been won for a new school building, the superintendent has given a sigh of relief. In the rural districts the real fight just starts. There are certain factions that feel that the site should be selected near them. Sometimes very bitter strife occurs, strife that lasts for years. Sometimes school boards are deadlocked. Sometimes there are injunctions. Sometimes the district is divided, and neither part has a fit school. A case is very fresh in my mind of a school district in Ohio where a very singular thing happened.

Three members of the board in this district voted for a certain site; this site was a mile or so from the center of population and was not well situated to dispose of sewage. One of the three members lived on a farm that was contiguous to another school district. The county board of education was asked to set this member's farm in the adjacent school district. (In Ohio there is a law to the effect that the county board has the legal right to set any farm or land which is contiguous to another school district into the other school district.) The county board granted the request. Due to the fact, then, that the local board was deadlocked, the county commissioners appointed a man to fill this vacancy. The new member, who had really been decided on before the land had been set in the adjacent school district, was favorable to the more desirable location. So the site which the minority wanted finally won. It won after more "politics" were used than in securing a post office building or in moving a county court house. The feeling in that district will be bitter for a long time, for "politics" entered in. This is but one, not uncommon, happening when a school site is being chosen. I could recount many incidents that have been told me by rural schoolmen where the right site was not chosen and where many superintendents lost their positions or felt that they should change their positions to places where the controversy over the site had not wrecked the school morale.

This compiled score card will be a help to me and I hope that it will be of aid to the thousands of rural schoolmen who desire to choose the best site, and after they choose the best site I trust that it will help them show the patrons and taxpayers that it is the most desirable site by publishing the findings and this accompanying manual. I feel that the majority of the school taxpayers are fair-minded and need only to be shown that the board and the superintendent are working for the best interests of the child and that the site they chose was selected with equity and with complete disregard for any petty partisan likes or dislikes.

Following is the general plan used in compiling this score card:

(1) The various score cards dealing with the rating of school buildings which usually have several items treating of the site were studied with special reference to form and general ideas. (The score cards were the Strayer-Engelhardt, the Butterworth, and the Ashbaugh-Stevenson.)

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(2) Books on rural school life were read for needs of the consolidated schools and what the sites should contain.

(3) Articles dealing with rural consolidated schools found in the various school magazines and bulletins written by schoolmen were perused in more than cursory manner.

(4) Conferences were had with rural school leaders, professors, superintendents, board members and farmers—as to the items that should be examined when a site selection was being made.

(5) From these readings and conferences the questionnaire (Fig. 1) and the letter (Fig. 2) were evolved.

FIGURE 1
Comparative Score Card for Selecting Rural Consolidated School Site

Features	Points
A. Accessibility	
1. Nearest geographical center	
2. Nearest population center	
3. Most accessible to improved intersecting highways	
4. Farthest removed from neighboring high schools	
5. Nearest village or community center	
6.	
B. Surroundings	
1. Freest from unpleasant odors	
2. Freest from disturbing influences (a) Noise; (b) billboards, etc.	
3. Freest from immoral influences	
4. Most sanitary and healthful	
5. Farthest removed from hazards (a) Natural; (b) artificial.	
6. Most attractive; (a) well kept farms; (b) groves; (c) small brook	
7. Freest from dust and smoke	
8.	
C. Soil	
1. Most porous or permeable	
2. Freest from decaying organic matter	
3. Driest	
4. Most easily cultivated	
5. Least artificially constructed	
6.	
D. Drainage	
1. Best drained naturally	
2. Best drained artificially	
3. Best situated to dispose of sewage	
4. Greatest freedom from surface drainage	
5.	
E. Miscellaneous	
1. Satisfies most people	
2. Cheapest price	
3. Most desirable elevation	
4. Best natural grove or orchard	
5. Most protected from winds	
6. Most desirable as to size	
7. Most desirable as to shape	
8. Best quality of water	
9. Most attractive esthetically	
10. Greatest skyline	
11. Most desirable as to contour; (a) for school building; (b) for playground and athletic field	
12.	

FIGURE 2

Dear Coworker:

No doubt you have often wished that there might be some scientific means by which the choosing of a rural school site could be accomplished without making the choosing a burning issue.

We have devised a comparative score card. After it has been standardized by the aid of a goodly number of schoolmen, we feel that this card can be used as a semi-scientific instrument.

Will you please help us standardize this score card by filling in the number of points you think each item deserves? The grand total of these points should be one thousand. If you think that more items should be added, or that some items are too unimportant to have a place on the card, please place these suggestions at the bottom of the comparative score card.

This score card will be used generally when two or more sites are under investigation, hence the reason for the superlative degree. In case a school board and superintendent wish to check the site already in use they can strike out the superlative and the features that are included for comparative purposes.

Very cordially yours,

(6) Copies of the blank score card and letter were sent to quite a few of the state departments of education, county superintendents, and specialists in rural education.

Answers to my request were received from over 75 per cent of the persons sent to. Forty-five of these persons answering gave evaluated results as requested; the remaining per cent gave very worth-while suggestions and different ways of scoring. In this list of evaluated answers were twenty state departments of education, thirteen county superintendents, and twelve rural specialists.

(7) The various items in the valuated questionnaires were tabulated and then given statistical treatment. (The items are given in weights that are multiples of five in order to make for ease of scoring.)

(8) There is a slight difference in the number of items considered in the preliminary score card and the final card. This combining of several of the items was done at the suggestion of quite a few of the schoolmen answering the questionnaire. These changes have all been of minor nature but add to the worth-whileness of the card.

(9) With the score card is a short manual that I hope will add to its effectiveness. In this brief manual I have used simple and direct diction. I have used the language of the newspaper, feeling as one superintendent, who said to me, "It (the manual) must be written so that the average patron can understand it."

(10) This score card is to be used primarily to select sites on which the consolidated or centralized schools are to be erected. It can be used to rate sites where there are schoolhouses, although that was not the original intention of the writer. When I first started to work this idea out I thought a score card that would use the superlative degree would be the most desirable for usually there are three or more sites to be considered before the choice is made. Figure 1 will show the first form used. In the final score card (Figure 3) I dropped the superlative degree for it seemed unnecessary. In Figure 3 where there is room for at least four sites A, B, C, and D; the total points awarded for each item would be the same as the evaluation given each item. That is in item, say I, if A were to receive 10; B, 20; C, 10; and D, 0, the total would be forty, or if none of the sites were high in this item the total would be less than forty, but never more. The site, then, receiving the largest number of points would be the suitable site. There might be exceptional cases, however, where a certain serious drawback would put a site out of consideration but this would indeed be very rare.

MANUAL

I. Accessibility

This factor has several contributing parts. A school to perform its highest function must be located, first, to be most convenient to the greatest number of pupils, to make it possible for the greatest number to be educated. Second, the school should be placed best to serve other interests of the school district, that is, after the first aim has been satisfied.

1. Geographical Center

This term needs but little defining. A site that is equidistant from the school district's boundaries would be considered the geographical center. Variances from this site can then, for evaluation purposes, be checked easily.

2. Population Center

The method used by the U. S. Census Bureau is the most satisfactory for school purposes. The location's distance, in a general way, can be ascertained by drawing circles of various radii with the proposed site as center. This will show the pupils, in the first half mile, second half mile and so on. This proposed site can also be compared with the real population center. Attention should be given to the probable trend of population and a realization that there is always a changing population in the rural districts. Sites, then, that do not vary more than one-half mile from being population centers would not be chosen illogically, due to this factor, the floating population.

3. Improved Intersecting Highways

An improved highway may range anywhere from a good stone road to a brick surface. In some states (where are the mild weather conditions) gravel roads, with a fair crown, would be considered satisfactory. Intersecting highways within one-half mile of the site would be considered near and very advantageous. (The consolidation project to be really successful must be supported by good roads, whether transportation is furnished by the board of education or not.)

4. Neighboring High Schools

If the school board is intending to have a high school as well as an elementary school on the site, the site, then, should be chosen so that it is not near any neighboring high schools. If the proposed high school is nearer than two

miles to another high school, the time might come when the taxation problem and the desire for larger schools will make the present location seem very poorly chosen. On the other hand, if there is to be only a building for elementary divisions and say one or two years of high school work the reverse of this would be true. It would be well to consider the site in the light of a contributing depot for the families having children in the grades and in the high school. Here they would gather and those attending the high school could be transported in a body in a short time; it would aso serve, even, if transportation were not furnished, for several families could pool the expenses of the children attending high school.

5. Community Centers

A community center may be defined as a village, cross roads or mingling place where people gather for business, social and religious purposes. The "travel habit" of the community must be taken into cognizance under this important item. The community center idea is distinctly rural. Another important thing to bear in mind is nearness to town, or community center, if there are to be no teacherages on the site.

II. Surroundings

This general item takes into consideration the natural and artificial conditions such as soil, sanitation, morality, etc., around the proposed site and does not include anything in the site proper; for that which is found in the site proper comes under other headings.

1. Freedom from Unpleasant Odors, Dust and Smoke

a. Unpleasant odors that sometimes arise from factories, decaying soils, polluted rivers, barns, etc.

b. Dust from too near roads, sand dunes, etc.

c. Smoke from steam engines and factories.

2. Freedom from Disturbing and Distracting Influences

a. Noise from switching trains, factories, saw-mills, nearby highways.

b. Distracting influences from too gaudy billboards, etc.

3. Freedom from Immoral Influences

Immoral influences from nearby stable barns, questionable roadhouses and dwelling places, and loafing "hangouts."

4. Sanitary and Healthful

Some conditions that are detrimental to sanitation and healthfulness are polluted streams, ponds or marshes, a neighborhood where many deaths occur and sickness and disease seem common, where houses and outbuildings are insanitary, and barnyard drainage is not uncommon.

5. Freedom from Hazards

a. Natural hazards such as swift flowing and deep streams, also overflowing streams, nearby mountains and dangers from snow slides, forests adjacent to the school site with danger from falling trees and limbs, and fires.

b. Artificial hazards such as dangerous railway crossings and carelessly fenced railway lines, heavy traffic highways near playgrounds, etc., and fire hazards from highly inflammable buildings.

6. Attractive

Some items that lend to the esthetic and to the appeal to that which is the best in man are:

a. Well kept farms and buildings.

b. Groves that are kept cleared are not only valuable for the esthetic but furnish work for vital nature study.

c. A small brook would add greatly to the appeal and prove a fine laboratory for several of the subjects taught in the school.

III. Soil

The soil of the school site should have certain properties or it will affect seriously the health of the pupils.

1. Permeable and Dry

A soil should be quick drying, this means more than simply having a quick drying top soil; there must be permeableness to the subsoil or the building will always have a dampness about it that is ill for the life of the building and the health of the pupils. A soil that dries quickly is very necessary for the playgrounds.

2. Free from Decaying Organic Matter

A site that is over an old marsh, an old pond or small lake, or has much organic matter in the soil, will make for poor health among the pupils and bad foundations for a building, and be poor for playground; for these organic properties will, in time, decay and give off impurities.

3. Typical for Cultivation Purposes

The soil should be typical of the soil in the school district if real research work is expected to be done efficiently.

4. Free from Artificial Construction

Artificial soil may be soil used to fill in the proposed site some years ago, soil that will be needed to bring up the grade, and soil that has been used to build the fertility of the ground. The site should not have too much artificial soil; for it makes for unnatural conditions in tillage, poor foundation for playground, and is unsafe for the school building.

IV. Drainage

The drainage problem in the rural district is very complex, in most places. (Most states have laws appertaining to this item.)

1. Possibility of Drainage

Some sites will have natural underground drainage, some will have a slight slope, some can be well drained by use of tiles, while some will have soil of quick sand nature that will not permit satisfactory drainage. The thing to bear in mind is the best drainage at a reasonable cost.

2. Disposal of Sewage and Outlet

A school in this day and age should, at least, be modern as the average home, if not the forerunner of what is best. If the schoolhouse is to be modern there will be the sewage problem. (Quite a few of our states handle this by hard and fast regulations.) There should be a fair-sized ditch, or stream, within a mile, so that by running the waste through the sand filter or other purification devices it would be purified. If no outlet is near it means a costly plant or long span of large tile. Most sites, though, will have an outlet within at least two miles.

3. Freedom from Surface Drainage

a. A site lower than surrounding land will make for annoying surface drainage.

b. A site that has too much slope will cause bad surface drainage that will not only cause a highly saturated condition near the site but will wash away the top soil.

V. Miscellaneous

Under this heading are various items that could not be grouped under the four preceding headings. These items are planned to fit most of the conditions that might arise in the various parts of the United States and her insular possessions.

1. Satisfies People

The degree of satisfaction a proposed site receives from the patrons may be learned by the tone of the community gatherings, straw votes, and from the school board members who have a chance to get opinions.

2. Economical

Naturally the big factor under this would be the first cost, or buying price of the site, then would follow the cost of preparing the site for school uses, and then finally the probable cost of adding additional land in the future.

3. Contour of School Site

a. The part of the site where the schoolhouse is to be located should, if possible, have a slight elevation. It should afford a reasonable space for a campus between the road and the schoolhouse.

b. The playground and athletic field should be level, at least, where the active playing space is.

4. Grove or Orchard

A grove that has been well planned or can be made so by removing some of the trees will add much to the site and also help during those years when the site has that unfinished appearance. An orchard will give what the grove has to offer plus a laboratory for the agriculture and home economics departments. It is fine if a proposed site has these advantages and has them located advantageously.

5. Protected from Winds

A proposed site may be protected from winds by natural or artificial barriers that are far enough removed to allow full benefit from the sun; but still afford reasonable protection from the winds that sweep through some of our states. A site that is too high or is on a slope that faces the cold winds would be bad for athletic games and for efficient heating of the school buildings.

6. Desirable Size

A rural school site should have at least fifty square feet of playground space per pupil. Then, if there is to be a high school department, there must be an athletic field having a gridiron, two baseball diamonds, tennis courts, volley ball courts, and a quarter of a mile track. This athletic ground should contain six acres. (If there are more than 150 high school pupils it should be correspondingly increased.) There should be at least a half acre of campus to enclose the schoolhouse and give it a good setting.

Each community will have different ideas about the land needed for agricultural purposes; there should not be less, however, than forty square feet per pupil. Another factor, where the law allows it, should be land for a teacherage, a half acre at the minimum.

7. Desirable Shape

A proposed site should be examined as to what scheme of landscape work can best be used. If the site is of such a shape, due to peculiar boundaries (shoesstring shape), it should be evaluated very low.

8. Quality and Quantity of Water

If there is a well on the proposed site, its water should be tested for impurities, also for quantity. If there is no well the nearest drilled well should be examined as to purity and quantity. Sulphur water is very unpleasant and stains all the white enamel, the same can be said usually of any water rich in mineral.

(Concluded on Page 130)

FIGURE 3.
SCORE CARD FOR SELECTING SCHOOL SITES FOR RURAL CONSOLIDATED SCHOOL BUILDINGS

Name of School District.....Date.....
Address of Clerk of Board of Education.....
.....Scorer.....
Location of Sites.....A.....
B.....C.....
D.....E.....

		Points	Sites A	B	C	D
I.	Accessibility:					
	1. Geographical center	40				
	2. Population center	95				
	3. Community center	80				
	4. Improved intersecting highways	65				
	5. Neighboring high schools	40				
		320				
II.	Surroundings:					
	1. Free from unpleasant odors, smoke	40				
	2. Free from disturbing influences	30				
	3. Free from immoral influences	45				
	4. Sanitary and healthful	55				
	5. Removed from hazards	30				
	6. Attractive	25				
		225				
III.	Soil:					
	1. Permeable and dry	45				
	2. Free from decaying organic matter	20				
	3. Typical for cultivation purposes	30				
	4. Not artificial construction	15				
		110				
IV.	Drainage:					
	1. Possibility of drainage	50				
	2. Disposal of sewage and outlet	40				
	3. Free from surface drainage	25				
		115				
V.	Miscellaneous:					
	1. Satisfaction of patrons	30				
	2. Economical	20				
	3. Contour for building and playground	40				
	4. Grove or orchard	15				
	5. Protected from winds	15				
	6. Desirable size	30				
	7. Desirable shape	15				
	8. Quality and quantity of water	35				
	9. Attractive	20				
	10. Skyline	10				
		230				
	Total	1000	A	B	C	D

REMARKS .....

NEW CAMDEN JUNIOR HIGH SCHOOL

The building is fireproof throughout. Light face brick is employed on the exterior with terra cotta and limestone trim to match. Composition floors, steel sashes and tile roof of the Spanish style are employed.

The approximate size of the structure is 148 feet by 282 feet. The auditorium is located on the first floor and seats 1,200 students. On this floor, too, are located the lunch room, gymnasium, locker and shower rooms, manual training, domestic science and classrooms.

The second floor embraces the administration and teachers' rooms, auditorium balcony and classrooms. The third floor is given to science, commercial, drawing, sewing and general classrooms. On this floor are also located the library and auxiliary rooms.

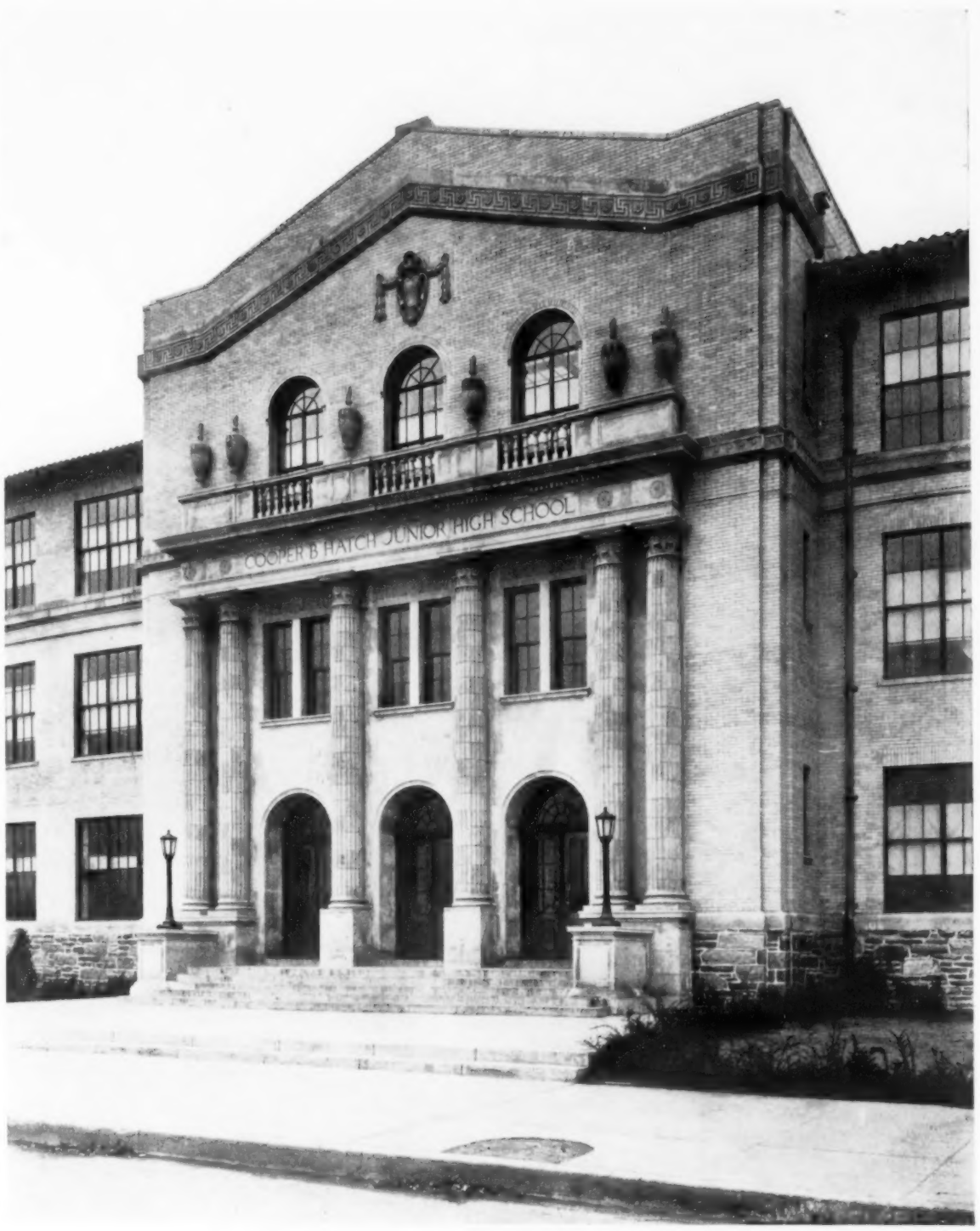
The heating and ventilating system consists of a combination of warm air and steam system. All plumbing fixtures are of the latest design and of the best sanitary efficiency.

The total cost of the structure is $742,834, or 36 cents per cubic foot. The plans were drawn by Clyde S. Adams, architect, Philadelphia, Pa., who also superintended the construction labors.

RIGHT: ENTRANCE DETAIL.

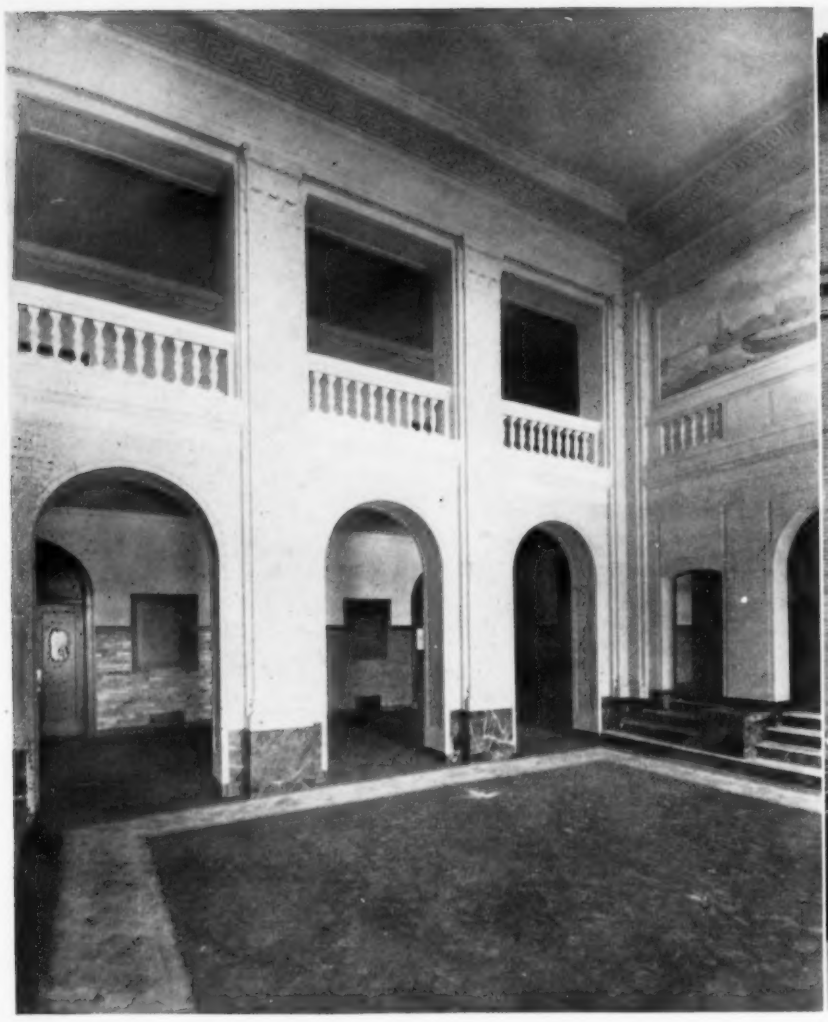
BELOW: GENERAL VIEW.

COOPER B. HATCH JUNIOR HIGH SCHOOL,
Clyde S. Adams, Architect,
CAMDEN, N. J.
Philadelphia, Pa.

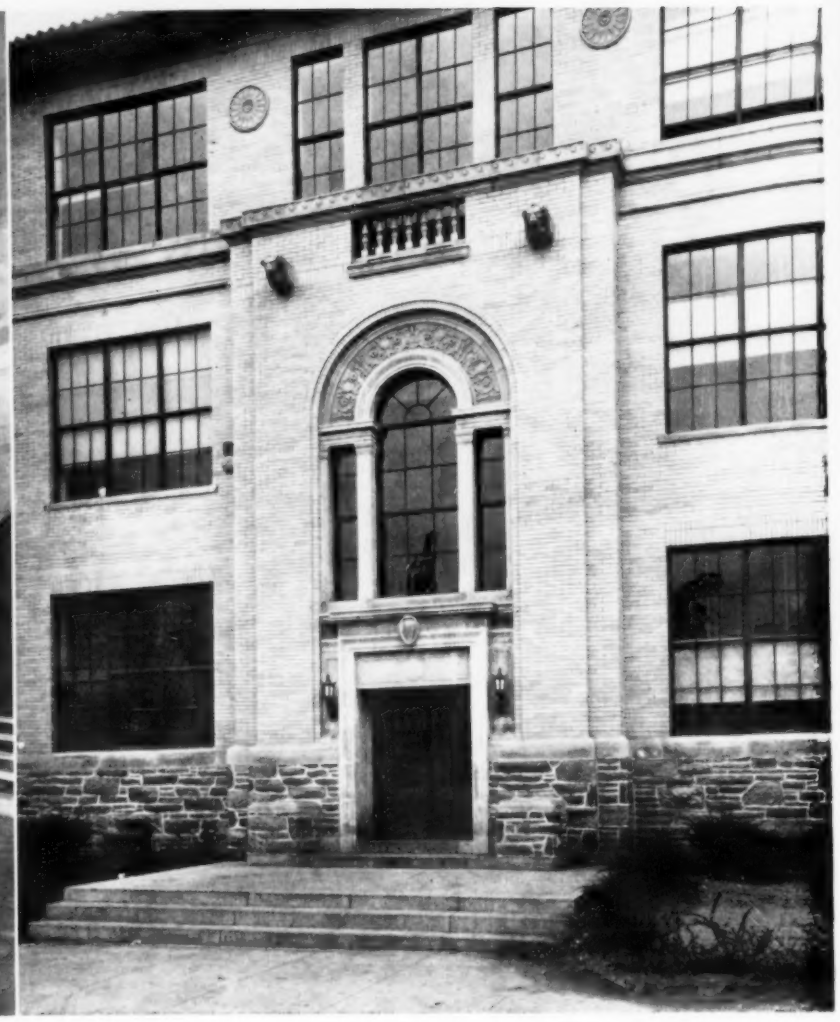


ENTRANCE DETAIL, CAMDEN JUNIOR HIGH SCHOOL, CAMDEN, N. J.

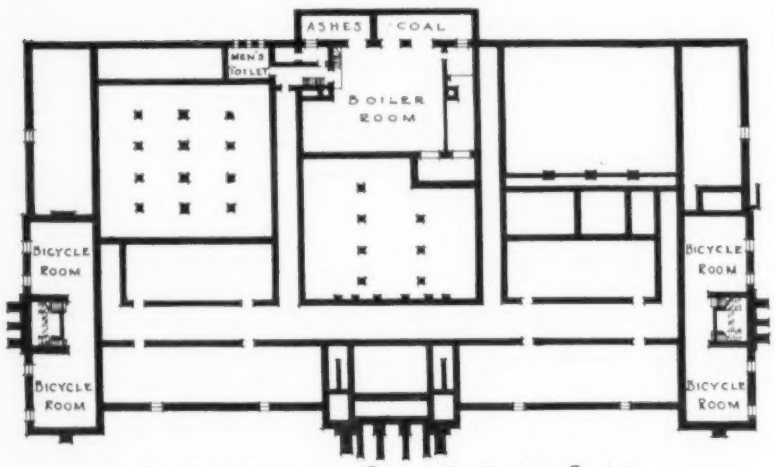
GENERAL VIEW, CAMDEN JUNIOR HIGH SCHOOL, CAMDEN, N. J.



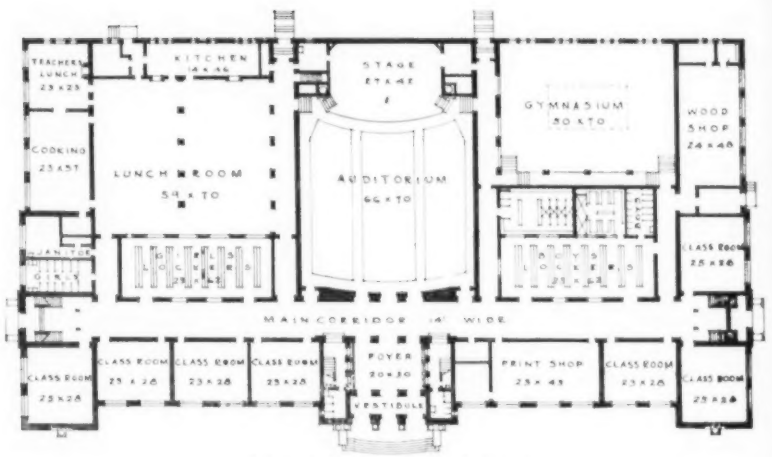
FOYER AND MAIN CORRIDOR.



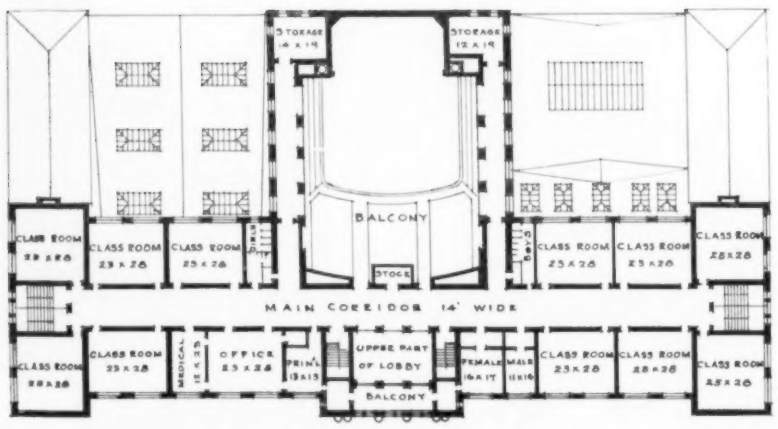
DETAIL OF SIDE ENTRANCE.



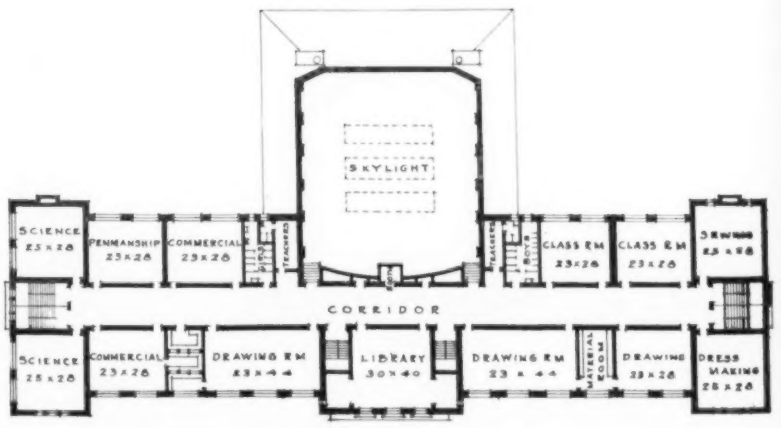
BASEMENT AND FOUNDATION PLAN



FIRST FLOOR PLAN

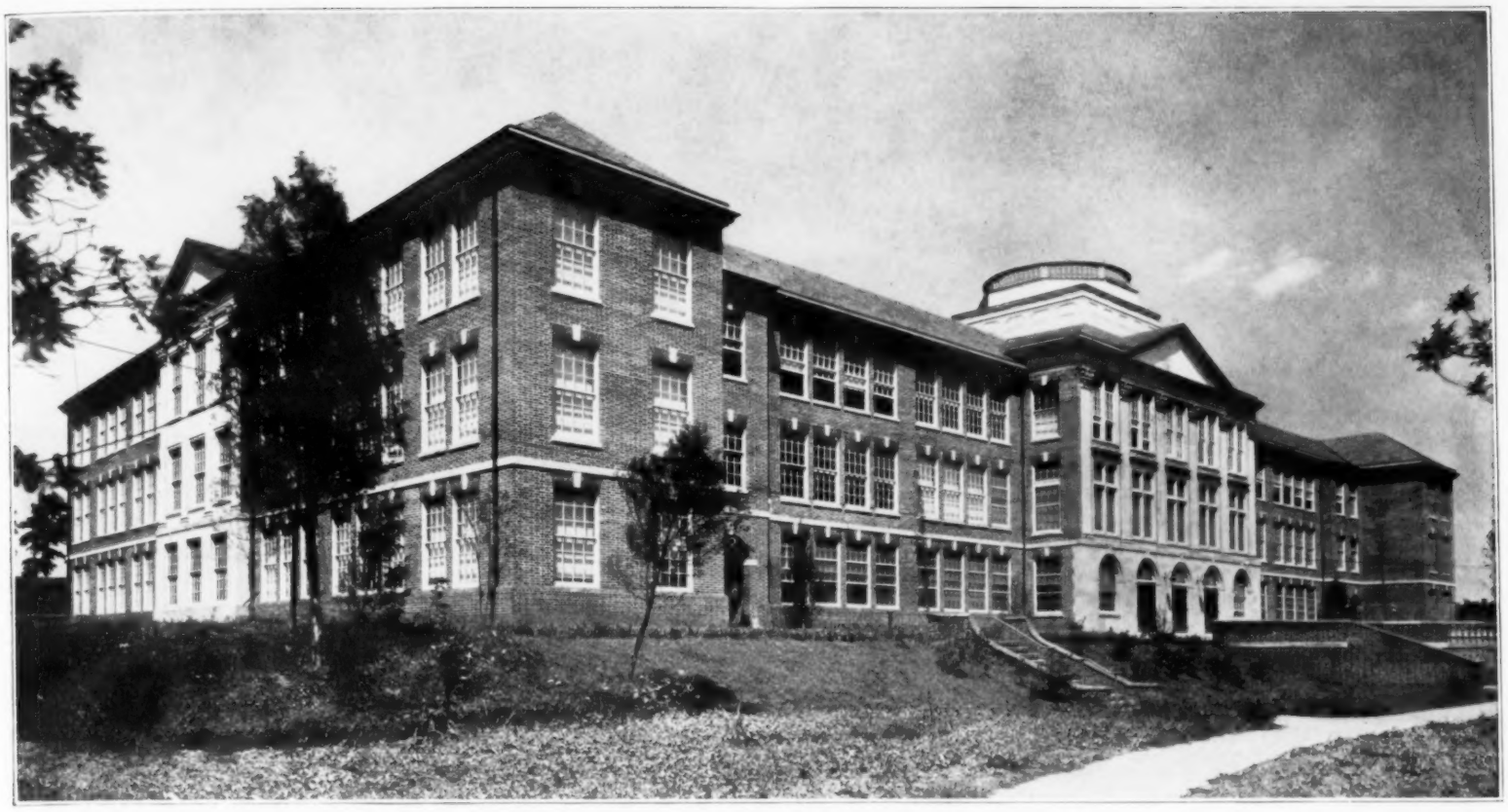


SECOND FLOOR PLAN

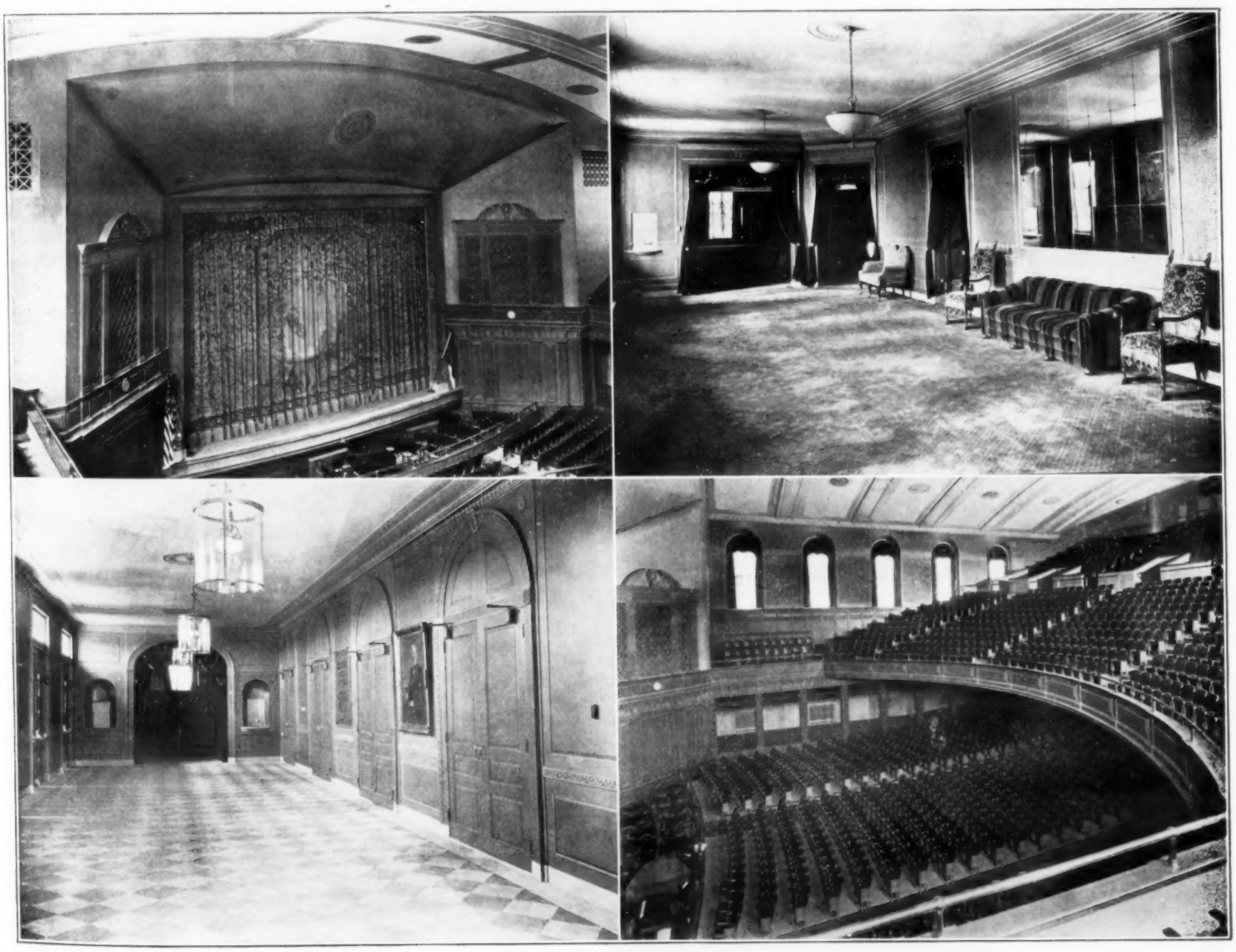


THIRD FLOOR PLAN

FLOOR PLANS OF THE JUNIOR HIGH SCHOOL, CAMDEN, N. J.
CLYDE S. ADAMS, ARCHITECT, PHILADELPHIA, PA.



THE RICHARD J. REYNOLDS HIGH SCHOOL, WINSTON-SALEM, N. C.
CHARLES BARTON KEEN, ARCHITECT.

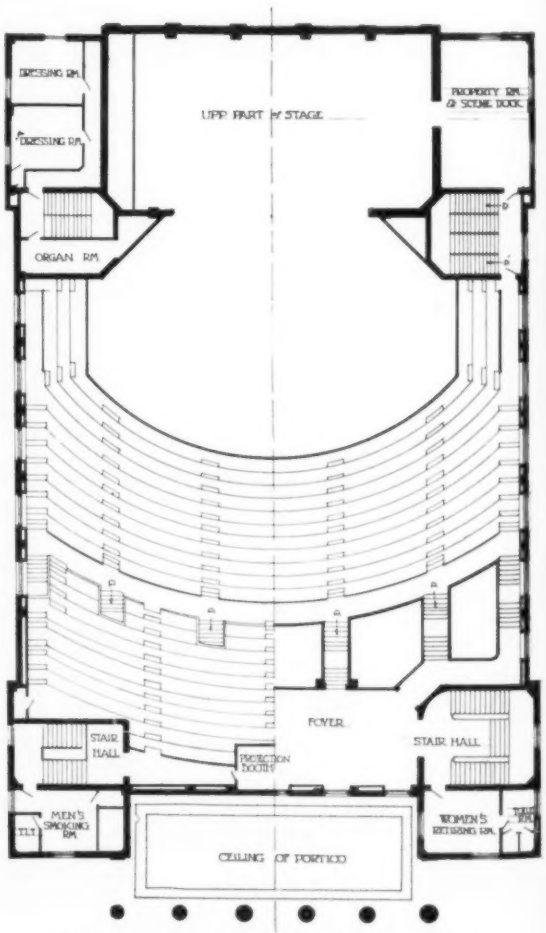


TOP: DETAIL OF STAGE. BOTTOM: DETAIL OF LOBBY. TOP: BALCONY FOYER. BOTTOM: VIEW FROM BALCONY.

THE RICHARD J. REYNOLDS HIGH SCHOOL, WINSTON-SALEM, N. C.
CHARLES BARTON KEEN, ARCHITECT, PHILADELPHIA AND WINSTON-SALEM.

THE RICHARD J. REYNOLDS MEMORIAL AUDITORIUM, WINSTON-SALEM, N. C.
CHAS. BARTON KEEN, ARCHITECT.

MAIN PORTICO, THE RICHARD J. REYNOLDS MEMORIAL AUDITORIUM,
CHAS. BARTON KEEN, ARCHITECT, PHILADELPHIA, PA.



BALCONY PLAN, MEMORIAL AUDITORIUM,
RICHARD J. REYNOLDS HIGH SCHOOL,
WINSTON-SALEM, N. C.

WINSTON-SALEM'S NEW HIGH SCHOOL

George H. Dacy

The new Reynolds' high school building at Winston-Salem, North Carolina, was built and equipped at a total expenditure of $710,000, the school grounds and 56-acre athletic field being the gift to the city. A memorial auditorium now under construction, which will cost an additional $400,000, will afford an unusually fine assembly.

The Reynolds high school building is constructed of reinforced concrete and brick and is fireproof throughout. The roof is slate while the floors are linoleum. The building is admirably lighted, ventilated and heated—factors of outstanding importance throughout the southern states which only during the last decade have made determined attack on the poorly equipped and illy ventilated buildings which previously had served as the hubs of the educational system.

In the new Reynolds high school, the arrangement is such that all the rooms are lighted from the left and rear of the students. The net glass area in each room is equivalent to one-fifth of the floor space which means, in general, that each room has, at least, four windows, each containing 128 square feet of glass. Ample artificial light is also provided. Each classroom is equipped with nine lighting units which provide for a minimum of 6½ candle power on the desks.

Ventilation is effected by means of tempered air which is supplied to the classrooms at a temperature of 70 degrees Fahrenheit in sufficient quantity so that the air content of each room in the large building may be changed every fifteen minutes. Foul air is exhausted by gravity and runs through a recirculating duct system to the air intake. Large, electrically driven suction fans draw the air through the intakes and humidifying and washing appliances before it is distributed throughout the building. In the winter, the air is heated artificially to the desired temperature. During the warm weather months, the air is cooled to a temperature where it is most beneficial to the students. The temperature is controlled by thermostatic apparatus while the humidity of the air is also controlled by automatic means.

Some of the more southernly schools of Dixie do not require permanent installations to provide artificial heat but in the latitude of North Carolina, direct steam radiation is almost as important as it is in the heart of the American corn belt. The Reynolds high school is heated from a boiler plant housed in a separate building. The boiler house is linked to the school building by an underground tunnel in which the heating pipes are extended to the school basement where the fans and air washers are located.

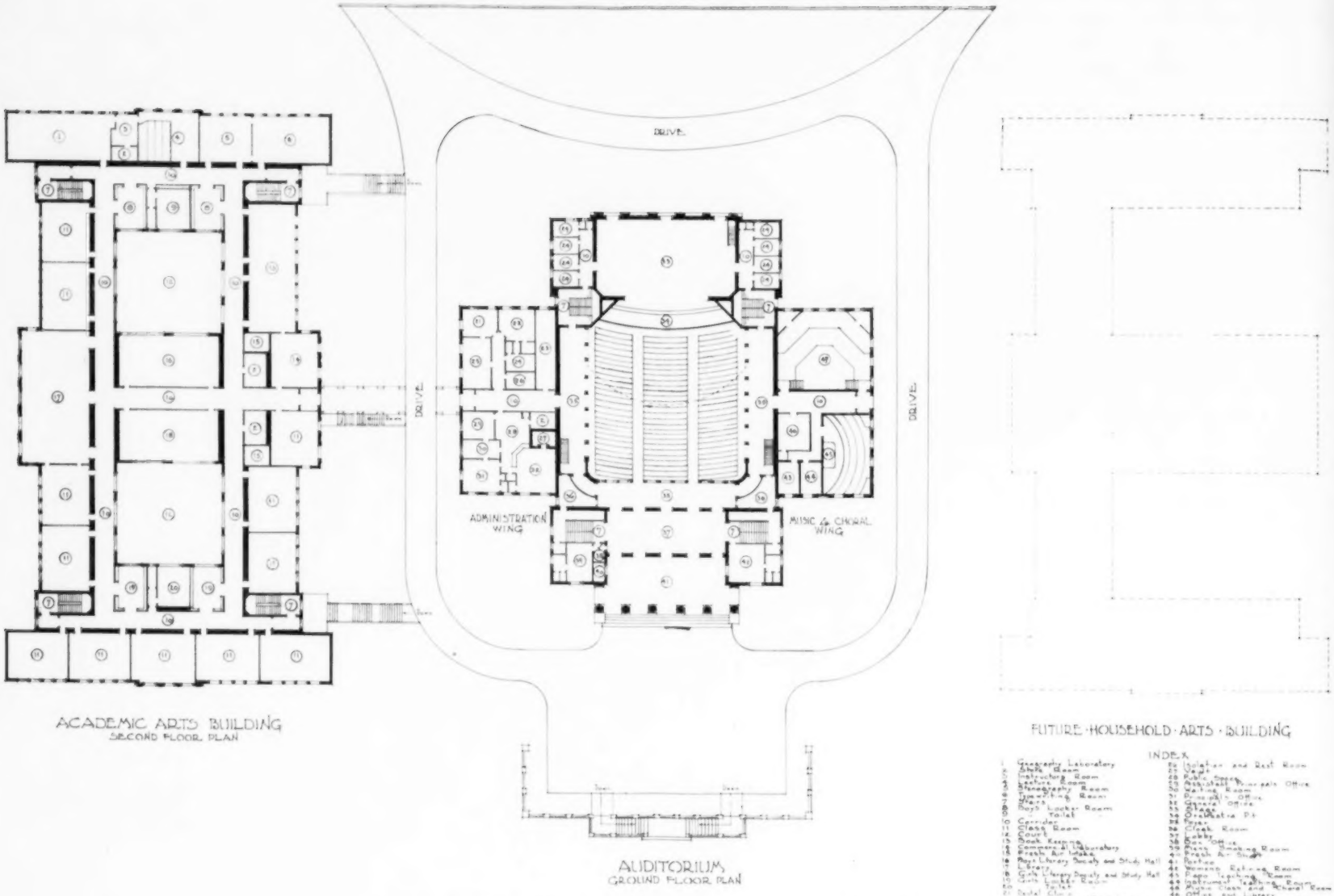
DETAIL OF THE CLASSROOM BUILDING, RICHARD J. REYNOLDS HIGH SCHOOL, WINSTON-SALEM, N. C.
Charles Barton Keen, Architect.

THE RICHARD J. REYNOLDS MEMORIAL AUDITORIUM, WINSTON-SALEM, N. C.

The high school is provided with a well equipped manual training shop containing all the practical woodworking machinery essential in an establishment of this size. The workshop is housed in a special building separate from the schoolhouse. The printing shop is performing all the printing work for the municipal departments of Winston-Salem.

The homemaking and housekeeping desires of the girl students are catered to by one of the finest domestic science departments to be found in any interscholastic plant south of the Mason-Dixon line. A small, typical, four room apartment provided with all the modern conveniences and labor-saving appliances is a special feature. Here the different girls have opportunity to do and direct the actual work associated with the daily management of a miniature home. Special cooking and sewing laboratories are also provided. The laundry is replete in all the most modern equipment which takes the backache out of "blue Monday."

The present Reynolds high school plant consists of the school and the memorial auditorium



ACADEMIC ARTS BUILDING
SECOND FLOOR PLAN

AUDITORIUM
GROUND FLOOR PLAN

THE RICHARD J. REYNOLDS HIGH SCHOOL AT WINSTON-SALEM, NORTH CAROLINA

Chas. Barton Keen, Architect, Philadelphia, Pa., and Winston-Salem, N. C.

THIRD FLOOR PLAN

SECOND FLOOR PLAN

FLOOR PLANS, RICHARD J. REYNOLDS HIGH SCHOOL, WINSTON-SALEM, N. C.

which was completed at the Easter vacation. This auditorium comfortably seats 2,200 people. It is connected with the school by underground walkways and will afford a place of assembly for all high school purposes as well as for community activities. The auditorium will be equipped as a complete modern theater.

Ground will be broken shortly for a third structure in the attractive group of high school buildings at Winston-Salem. It will constitute the third unit in the interscholastic plan and will be called the "Practical Arts" building. When it is completed, it will house the printing shop, woodworking shop, domestic science department, model apartment, sewing and cooking laboratories, and cafeteria and the floor space which these agencies now occupy in the high school building will be used as classrooms. This building will consist of a structural steel frame with brick walls and reinforced concrete floors.

At present the Reynolds high school is without gymnasium facilities. The high school, however, adjoins the Hanes Park, playground and athletic field of 56 acres, a remarkable feature of this highly modernized high school layout. A temporary building, containing dressing and locker rooms and shower baths, has been built for the use of the school boy and school girl athletes until a special gymnasium can be constructed in the central part of Hanes Park for the use of the students, and for the use of the community during the evenings.

The Reynolds high school is a three-story, attic and basement building 268½ by 152½ feet in floor dimensions. The greater part of the basement area is not excavated, although adequate facilities are provided for the ventilating and heating plants. The first floor of the commodious and well-designed school building now houses the temporary quarters of the printing and composing rooms, woodworking shops and domestic science department. The temporary lunch room, kitchens and store rooms are also on the ground floor of the structure. The biology laboratory and the general science laboratory with a connecting lecture room are on the first floor as well as the general offices and locker rooms.

Of the 75 rooms in the Reynolds high school, 22 are located on the second floor, one-half of these being classrooms, while the balance consist of laboratories, literary society headquarters, seminar rooms and the library. On the third floor there are 27 rooms, including 19 classrooms and eight laboratories, instructors'

(Concluded on Page 130)

The Problem of Classroom Seating

C. A. Anderson, Polytechnic High School, San Francisco.

The problem of classroom seating has two aspects, namely, the kind of seats and desks used, and the arrangement of them in the classroom. In a preceding article[1] the writer considered the advantages of the various types of school desks and attempted to establish some principles which should govern in the selection of pupils' seats and desks. The purpose of this article is to consider the seating plan, or arrangement, of the desks in the classroom.

In tracing the development of the seating plans commonly used today, we find many interesting variations as the idea was worked out. The philosopher, Aristotle, at Athens, delivered his lectures while walking about beneath the trees and porticos of the Lyceum; his pupils accompanying him on these walks had small need for seats or desks.

Contemporary prints and illustrations of classes in the medieval universities, show that in many cases, seats or benches, for the students were totally lacking. In some instances, the students would sit on straw sprinkled on the floor or they might stand throughout the lecture. Later, rude, wooden benches were used in the university classrooms.

Pictures of some of the early grammar schools in England indicate a seating plan which has passed out of existence. The pupils were seated in parallel rows along two opposite sides of the room, with their backs to the wall. Hence the boys on one side of the room would face the boys and also the wall and windows on the opposite side. There were frequently three rows on each of the two sides of the room, arranged in tiers, so that the boys in the rear row were elevated considerably above those in the front row. Evidently this seating plan was considered very satisfactory in its day.

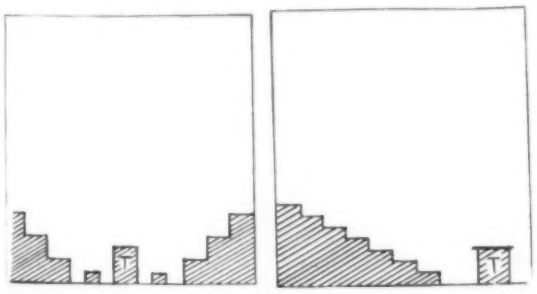


FIG. 1. FIG. 3.

Fig. 1 is a vertical section of such a seating plan, showing the three tiers of seats for the pupils on each side of the room, with a table or desk for the teacher in the middle, and small recitation benches on either side of the teacher's desk.

The earliest schools of the American colonies apparently made little use of the seating plans worked out in the European schools. It seems that some of these colonial schools had pupils' desks placed against three walls of the room so that the pupils faced the walls and the windows. See Fig. 2.

Later long benches were used, placed so that the "scholars" faced the schoolmaster up in front.

After a time these long benches were shortened so that they became double desks, i. e., to accommodate two pupils arranged in rows facing the teacher. These double desks are still found occasionally in some of the schools of the old type.

Today we are committed to the single desk. However, the *type* of desk has received a good deal of attention and has been more carefully studied than has the problem of the classroom

[1]Anderson, C. A.: Tentative Score Card for Elementary School Desks and Seats. "School Board Journal," July, 1924, pp. 46-47.

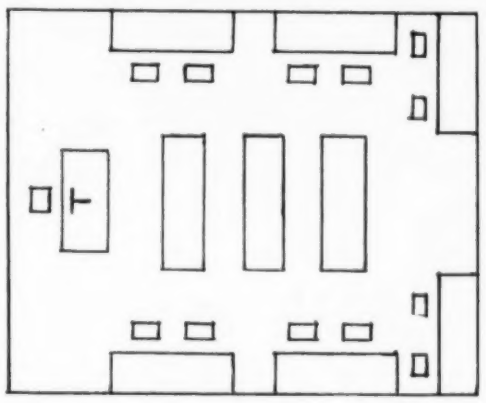


FIG. 2.

seating arrangement. There are a number of excellent school desks on the market but it is surprising how many classrooms still have the pupils seated in rigid, symmetrical rows facing the teacher's desk in the front of the room.

The seating plan of a classroom is an index of the up-to-dateness and progressiveness of the school. The seating arrangement is determined by the type of work that is being done. In determining the seating arrangement to be used, it is necessary, first, to determine the type of work or teaching that is to be done, and to plan the arrangement of the desks accordingly.

Most schools have adopted movable school furniture rather than the old fixed type for the reason that it lends itself better to the new type of instruction.

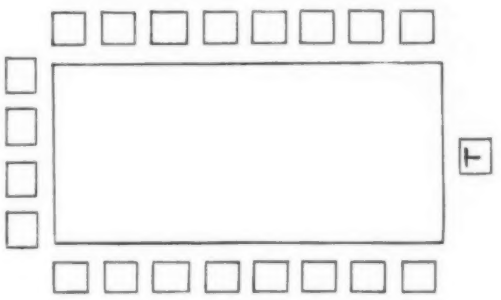


FIG. 4.

Of significance in this connection is the change that has taken place in the teacher's rostrum. Formerly the teacher taught from a high rostrum or platform and the teaching was of the "ex cathedra" type. The lowering of, and finally the disappearance of the teacher's rostrum is an indication of the change that has taken place in teaching, from the old "listen and remember" type, to the modern seminar method and the socialized recitation. The teacher no longer sits on his "throne" and speaks with the voice of authority. Instead he has joined his group of students and stimulated them to self-activity, which is the aim of true teaching. In all this the seating plan plays a conspicuous part.

The seating plan which is used in the classroom, then, is determined by the nature of the work to be done and the character of the recitation. For instance, science work requires a lecture room with a long demonstration table for the instructor, and raised seats for the students, theater fashion, as in Fig. 3. Likewise the special subjects require special seating arrangements adapted to their own particular needs. This discussion, however, is concerned particularly with the seating plans of today for the ordinary classroom in which the regular academic subjects are taught.

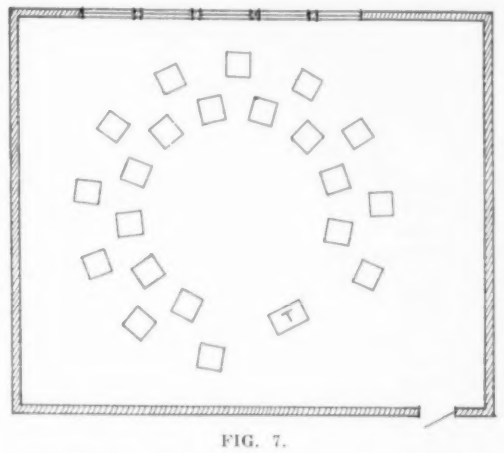


FIG. 7.

Of the various plans used and proposed, the seminar group arrangement, in which students and instructor are seated around a large table, is best suited to university and advanced high school classes where the classes are not too large. This plan seems to better promote a spirit of work on the part of the students than does the old straight row plan in which the teacher lectures exclusively. A spirit of informality and democratic participation in class work is induced by this plan. It has many desirable features, readily apparent, making it more desirable than the traditional classroom seating arrangement. See Fig. 4.

The following proposed seating plan has been devised by Mr. William G. Carr of the Glendale, California, schools, and is here reproduced with his permission.

Advantages of Plan II over Plan I:

1. Discipline is easier because all children are practically directly under the eye of the teacher.

2. The light is better and pupils can see the front and side blackboards with less interference. The following table shows the number of pupils with one, two, three, etc., pupils between them and the blackboard and windows under both plans.

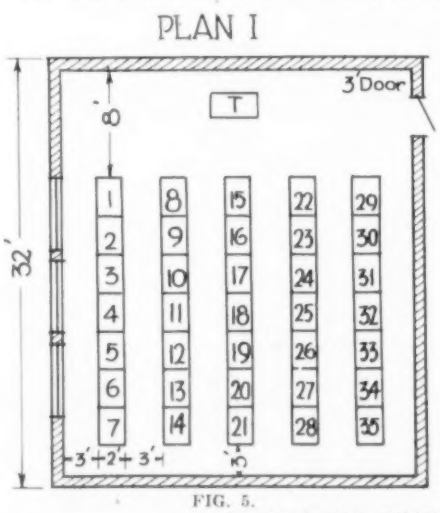


FIG. 5.

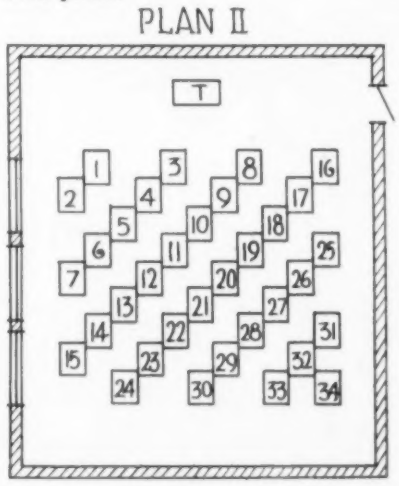
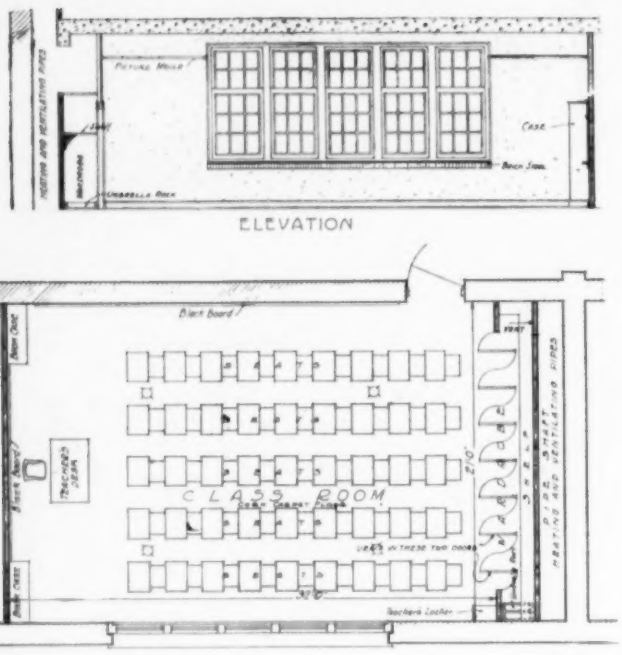
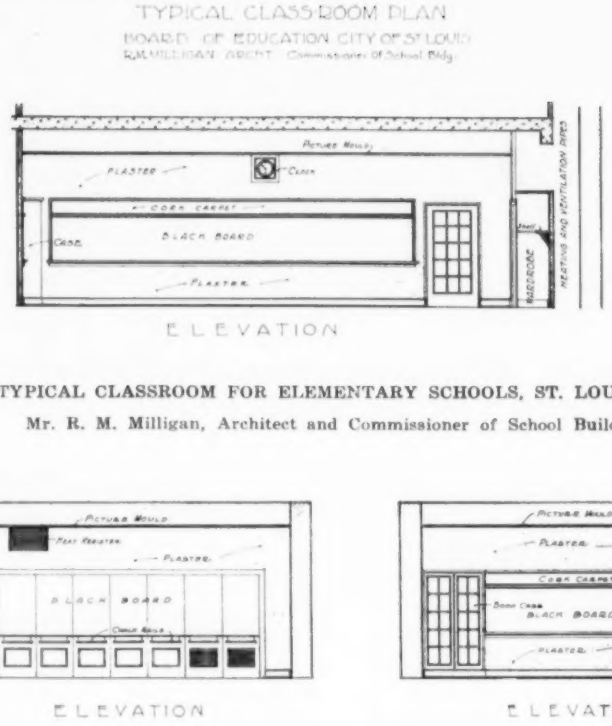


FIG. 6.

TYPICAL AND REARRANGED CLASSROOM LAYOUTS.





TYPICAL CLASSROOM FOR ELEMENTARY SCHOOLS, ST. LOUIS, MO.

Mr. R. M. Milligan, Architect and Commissioner of School Buildings.

Front Blackboard

	Plan I	Plan II
0 between (unobstructed view)	5	11
1 between	5	11
2 between	5	11
3 between	5	1
4 between	5	0
5 between	5	0
6 between	5	0
Side Blackboards or Windows		
0 between	7	9
1 between	7	9
2 between	7	9
3 between	7	7
4 between	7	0

The converse of this table is true for the teacher, of course.

3. Each pupil is by himself. His desk is a separate unit. He is not disturbed by the fact that the little girl in front has her braids of hair all over his desk or that the boy behind has the habit of drumming underneath his chair with his toes.

4. The room would be easier to empty in case of fire or panic. The approximate number of feet to be traveled in emptying the room is as follows:

Plan I .....900 feet
Plan II .....700 feet

5. The aisles are wider. Under Plan II, the minimum aisle is two feet, the average is three feet, and the maximum is five feet six inches. The average, minimum and maximum under Plan I is three feet.

The problem of classroom seating is one that will have to be solved by careful, scientific study. Pending such a study we may list some of the apparent advantages and disadvantages of the traditional classroom seating arrangement in which the pupils are seated in regular rows.

Advantages of the traditional classroom arrangement (Fig. 5):

1. The desks are usually fastened down and the room always presents an orderly appearance.

2. It simplifies the task of learning the names of new pupils at the opening of school since a seating chart can be used.

3. As pupils are usually assigned to certain seats, it is an easy matter to take the attendance by noting the vacant seats.

4. It is comparatively easy to arrange so that the light comes from the right direction.

5. Dismissal and fire drills can easily be organized into regular lines for marching out.

6. The janitor can probably clean the room in less time.

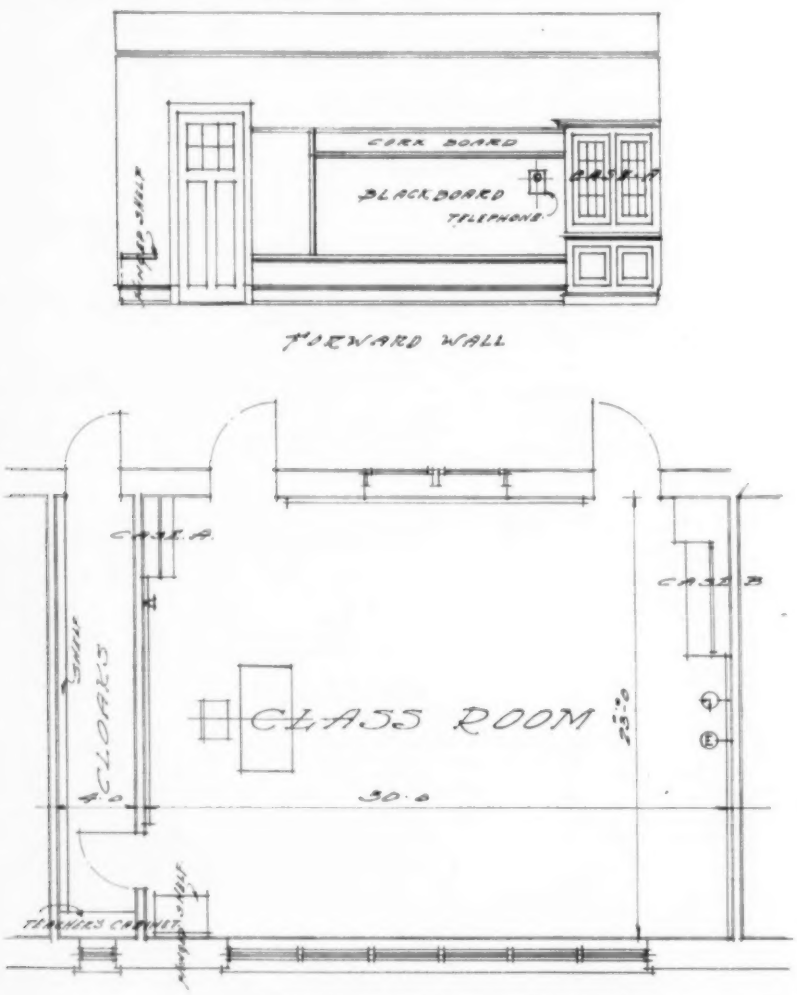
Disadvantages of the straight-row seating (Plan I):

1. The rigid uniformity of the seating tends to inject itself into the recitation which is apt to become artificial and mechanical.

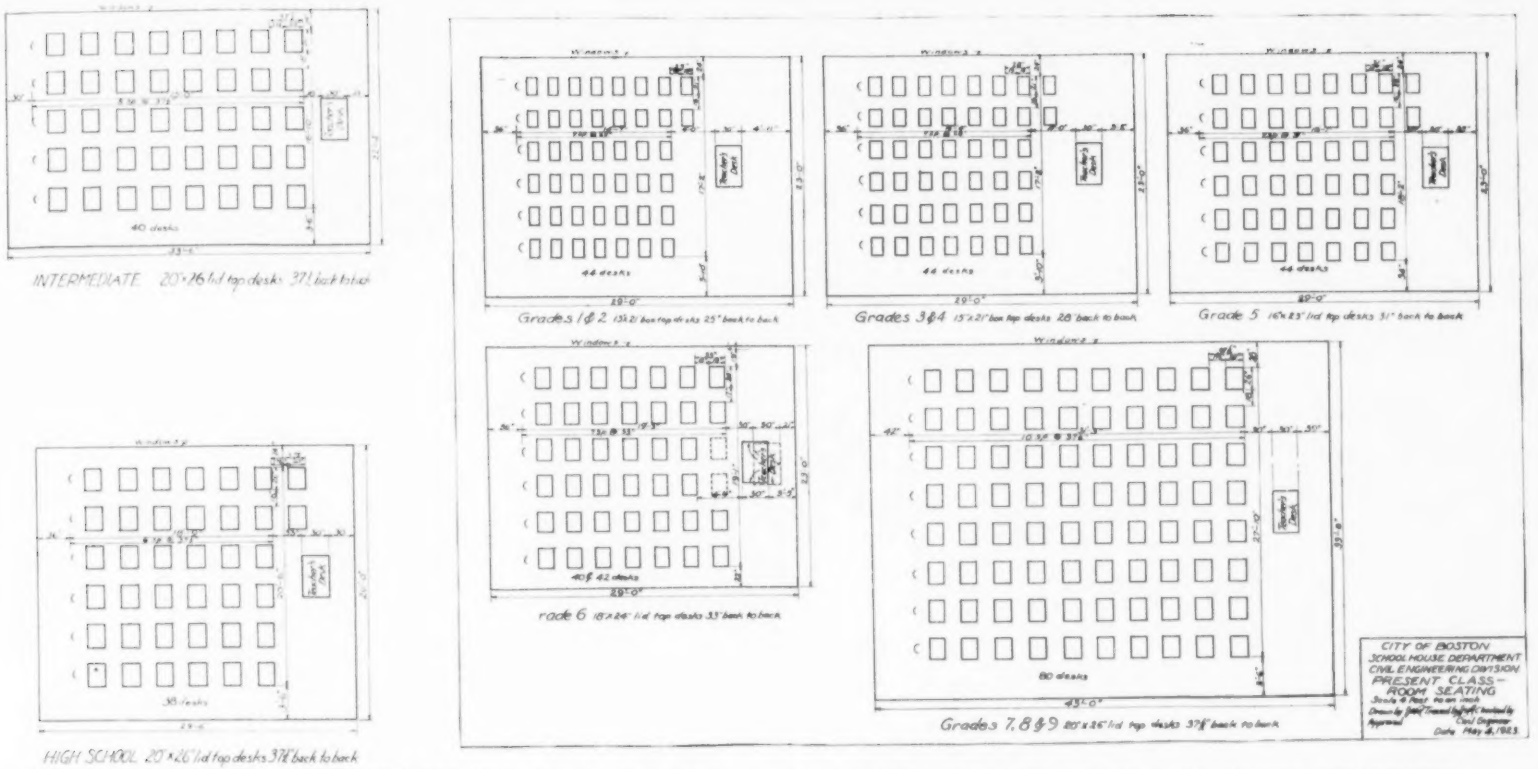
2. The pupils are apt to feel the dominating influence of the teacher too much rather than their own responsibility for taking the initiative and cooperating as a class.

3. It makes it difficult for the class to become "socialized," i. e., to feel their ability to work together as a group in problem-solving. This plan makes the recitation an individual and personal matter between the pupil and the teacher—the social or group feeling is negligible.

4. As the desks are usually fastened to the floor it is difficult to use the classroom for other activities, such as social affairs, etc.



TYPICAL CLASSROOM, NEW ORLEANS, LA. Mr. E. A. Christy, Architect of the New Orleans City



OFFICIAL LAYOUTS OF CLASSROOMS FOR NEW SCHOOL BUILDINGS, CITY OF BOSTON, PREPARED BY THE SCHOOLHOUSE DEPARTMENT.

The socialized recitation, representing as it does, a breaking away from the traditional type of teaching, does not thrive in the setting of the traditional classroom with its symmetrical and regular arrangement of seats in rows. What, then, is the ideal seating arrangement for the socialized recitation? It is a question that is more easily asked than answered. But perhaps we can get suggestions from other situations.

Who does not recall with pleasure evenings spent around the outdoor campfire in a summer camp? The topics that were discussed were charged with life and interest. The "give and take" of the conversation called into play all of one's wits and stimulated the mental faculties. It was spontaneous, lively, interesting and lasting in the impression that it made. Or perhaps it was a gathering of friends around a log fire in a spacious living room. There one could see the play of expression in the features of his fellows instead of looking at the backs of their heads. Here, then, we have a cue as to what the proper seating arrangement should be. If we can introduce into the classroom somewhat of the setting indicated above, around a campfire, we shall have an arrangement that will be a great improvement over the traditional classroom seating. If the pupils can be seated so that they can see and face each other in a social group and thus feel a little of the responsibility which the teacher usually feels and often monopolizes, the instruction will be of a much higher order and have far greater educative value. Thus it will be the function of the teacher as one member of the group to guide the discussion without assuming completely to dominate the group.

A seating plan for work of this type is suggested in Fig. 7. The seats are placed in two semi-circular rows, so arranged that none of the pupils face the direct light, the seats in the second row being behind the vacant spaces in the front row. Thus the pupils face each other and the teacher.

While it is difficult, if not impossible, to prescribe fixed rules and regulations for the seating plan of any classroom without careful, scientific investigation of the problem, yet it may be possible to indicate some of the general principles which should be followed. The following principles are suggested for consideration:

1. The pupils should not be arranged in straight rows, all facing the teacher in the front of the room.

2. The teacher should not do her teaching from an elevated rostrum up in front of the class.

3. The pupils should be so seated that they face each other for the recitation, i. e., they should recite to each other rather than to the teacher.

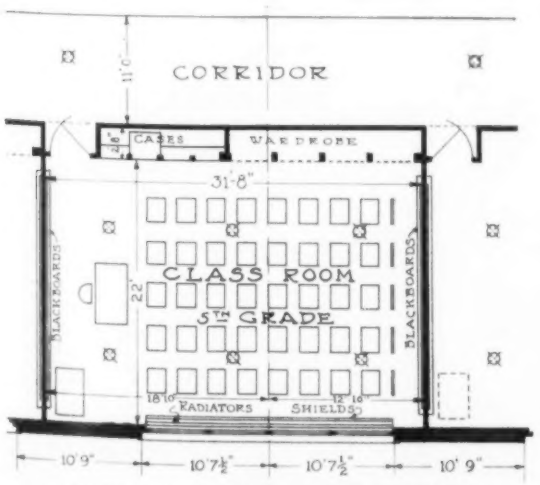
4. Probably a circular, or semi-circular, seating arrangement with the teacher included in the group, is a desirable plan.

5. The well-known regulations about not facing the glare of direct light, etc., should be observed.

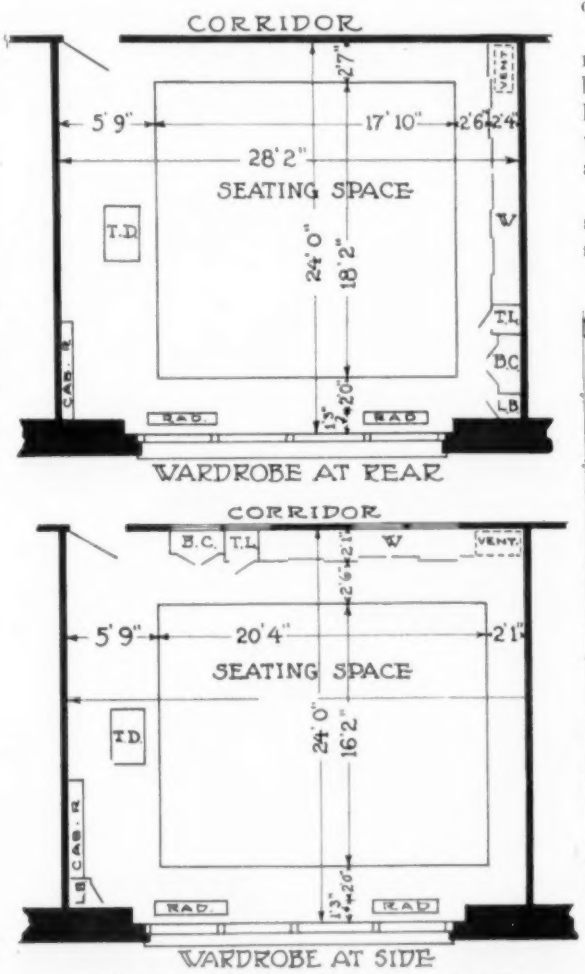
6. If it is a subject in which the pupils do not do much blackboard work and the existing blackboards are not located so as to be particularly useful, a movable blackboard on a standard will serve and it will be found to have several advantages over the fixed blackboards.

7. The desks should be of the movable type so that flexibility in arrangement will be possible.

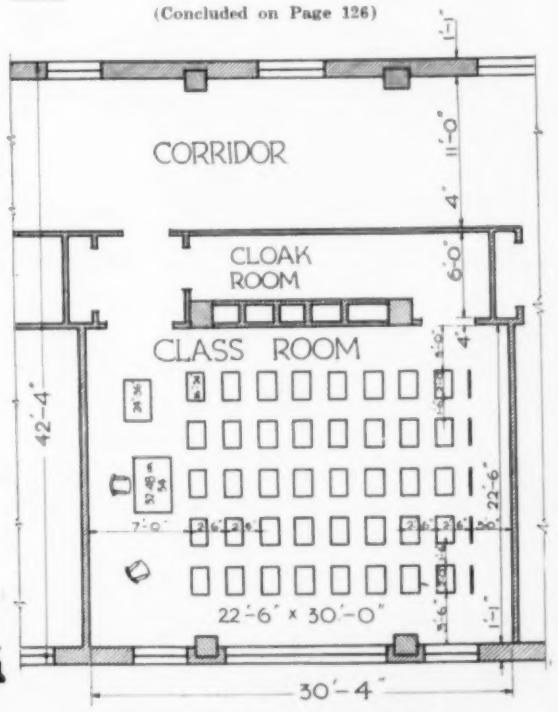
(Concluded on Page 126)



TYPICAL CLASSROOM, SEATTLE, WASH.
Mr. F. A. Naramore, Architect of the Board of Education.



TYPICAL ELEMENTARY CLASSROOM LAYOUTS, NEW YORK CITY.
Wm. H. Gompert, Superintendent of Buildings.



TYPICAL CLASSROOM, PHILADELPHIA, PA.
Mr. J. D. Cassell, Architect and Superintendent of Buildings.

NORFOLK ADVANCES NEGRO EDUCATION

The new Booker T. Washington school erected at Norfolk, Virginia, is a three unit plant, making it a combination high, elementary, and industrial school. The board of education believed that the colored population would be best served by a school in which the entire available educational service from the kindergarten to the fourth year of high school is unified.

The high school section contains 25 classrooms, each about 23½ feet by 30 feet in size, while in the elementary section there are 27 of the same size. The library and two science rooms are found in the high school section, and adequate office, storage, and toilet facilities are provided throughout the building. In the development of the vocational, or industrial, section the following provisions are made:

On the first floor is found a woodworking shop 53 feet by 58 feet, an automobile repair shop 34 feet by 39 feet, masonry and plastering shop 24 feet by 44 feet, and an electric and a plumbing shop 30 feet by 35 feet each.

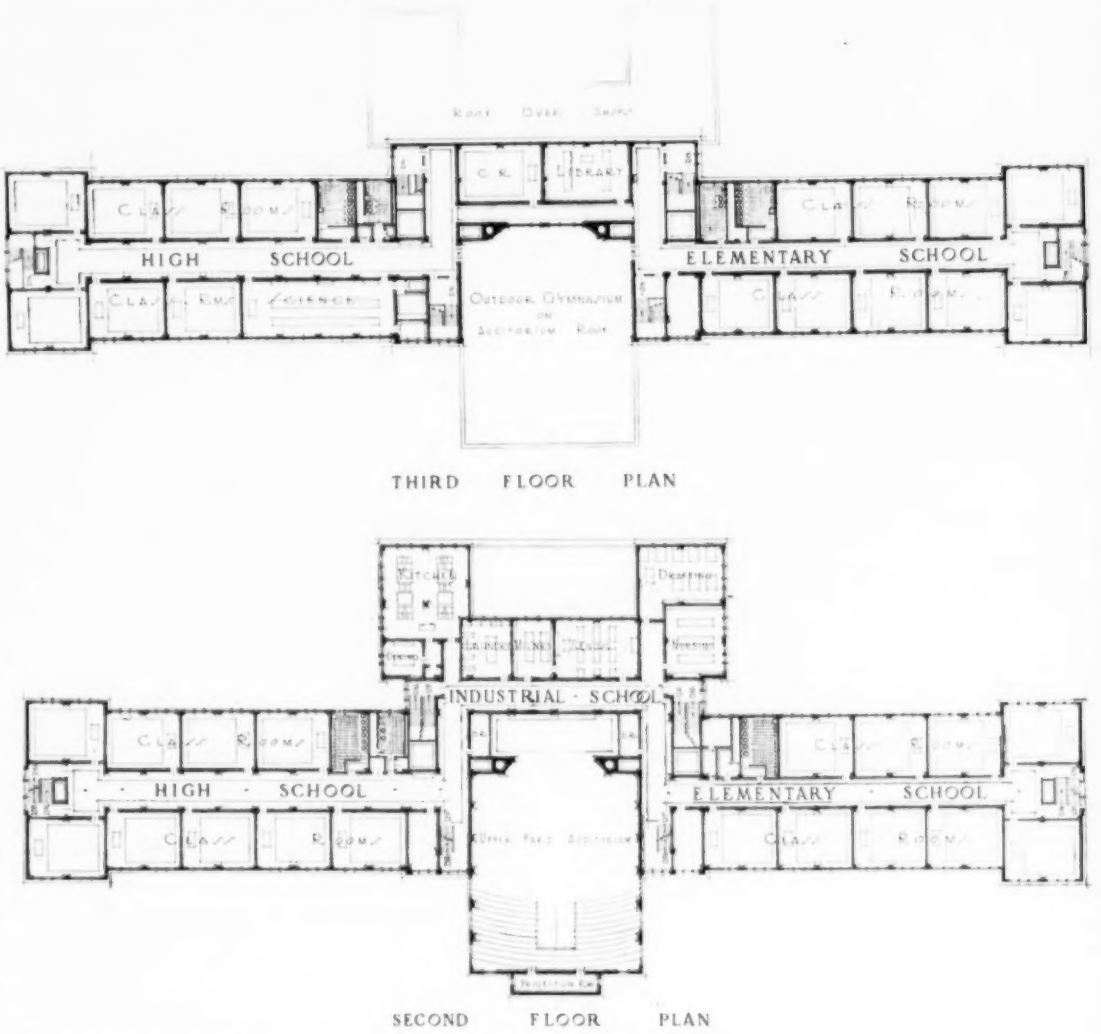
The second floor is mainly used by the household arts classes, there being rooms equipped for sewing, cooking, millinery, laundry working, and nursing classes. There is also a drafting room on this floor to be used by the pupils in these industrial classes.

Ample storage and office space is provided for this section in order that the materials used in these classes may be purchased in bulk and may have the proper care. The shops are provided with an abundance of light through large steel sash.

The following analysis of areas and costs are given as a matter of interest to those who have similar problems to meet:

Total area above basement.....97,178 sq. ft.
Occupied for strictly instructional purposes .....67% or 64,788 sq. ft.
Cost of building, equipped, including architects' fees $512,000
Total cubic contents.....1,716,040 sq. ft.
Number of pupils in classrooms..... 2,080
Cost per cubic foot.....$ .268
Cost per pupil.....$221.15

The building was planned by Mr. Benjamin Mitchell, architect, Norfolk, Virginia.



FLOOR PLANS OF THE WASHINGTON SCHOOL, NORFOLK, VA.
Mr. Benjamin Mitchell, Architect.

CONDUCTING A SCHOOL BOND CAMPAIGN

Marietta, Ohio, needed much money for new schools. The public mind was in a doubtful state. A campaign must be staged. The taxpayer must be informed. Failure would mean a calamity. The school authorities planned a campaign and carried the bond issue to success. The following program was observed:

I. Survey of entire school plan by Professor P. R. Stevenson, Ohio State University.

II. Advertising begun exactly three weeks before election.

1. Display running every other day, giving reasons (four-inch double column), together with a reader.

a. Do we need a new high school? This ad gave reasons why. Graph comparing forty per cent school with standard.

b. Is our tax rate high? Showing tax rate of every city in Ohio between ten and twenty thousand.

c. Can we afford it? Giving per capita wealth of above cities.

d. Are we badly in debt? Indebtedness of same cities. Shown graphically.

e. Is Marietta extravagant? Distribution of tax dollar.

f. Five quarter page advertisements written by the best ad man in the country. "Sob stuff" (furnished by nine industrial plants).

2. In advertisements, permission was obtained from advertisers to run a line in their ads. (Probably 75 different statements). Below are some of the lines.

a. Parkersburg has a modern building on a 27-acre site, Marietta has an antiquated building on three-tenths of an acre of hillside.

b. Good school buildings reflect the spirit of the community. Vote for the bond issue.

c. Give the boys and girls a modern school building; they will help pay for it.

d. Warner, Macksburg, Dexter City, Caldwell, Belle Valley, Bysville, Pleasant City and Cambridge. This is not the train crier on the Pennsylvania; only the names of towns on the new highway that have new high school buildings.

3. Picture Houses—Slides calling attention to need. Very brief but effective. Changed every other day.

4. Long letter with data sent to every member of Chamber of Commerce by the secretary.

5. Speeches by two members of board at every possible meeting.

6. High school paper devoted one issue.

7. Booklet distributed by the P. T. A. to every home.

8. Automobile posters.

9. Letter.

10. Ten minute talks by local clergymen on Sunday preceding.

III. School parade (day before election).

1. Headed by school band and organized by grades, first grade first, up to alumni.

2. Each grade or unit carried a large banner.

3. Each grade child carried paper shield with inscription, "Vote for Us." First and second grades wore distinctive caps made of paper.

4. Junior and senior high students carried banners with different slogans. (Probably two hundred different ones.)

a. My daddy will vote for it; he has faith.

b. Vote for it and we'll pay for it.

c. Poor schools and dumb bells go together.

d. "No campus, no gym, no nothin'; us fellers needs a friend, very truly, M. H. S."

IV. (These were originated for most part by the students.)

The parade was the best publicity.

V. Endorsements.

1. Modern Woodmen.
2. Elks.
3. Red Men.
4. Kiwanis.
5. Rotary and every one else we could induce to endorse.

WILL MEET IN KANSAS CITY

The National Association of Public School Business Officials will hold its annual convention in Kansas City, Mo., May 19th, 20th, 21st, and 22nd. The headquarters will be located at the Hotel Baltimore.

President R. M. Milligan. St. Louis, Mo., is preparing the program for the convention. Mr. John S. Mount, secretary, is making arrangements for reduced railroad fare privileges for the meeting.

EXTERIOR AND INTERIOR VIEWS OF THE BOOKER T. WASHINGTON SCHOOL, NORFOLK, VA.

MR. BENJAMIN MITCHELL, ARCHITECT.

THE AMERICAN
School Board Journal

WM. GEO. BRUCE
WM. C. BRUCE } Editors

EDITORIAL

THE MODERN SCHOOL PLANT AND THE GENIUS OF INVENTION

It may safely be said that the modern school plant embodies, in a fairly complete manner within its own needs, all the utilitarian devices which the inventive genius of America has been able to evolve. Or, stated in another way, it has brought to its service all the economies which modern science and invention have devised. In fact, the school plant has in many instances been the first to recognize an improvement designed to promote the economy and efficiency of its own operations.

There is perhaps no type of building that houses more souls in close proximity, at one and the same time, than does the school structure. The pupils are housed in larger numbers at fixed periods than are the guests of a hotel or the patients of a hospital. This fact, no doubt, has prompted school authorities to consider more closely the questions of safety, health and convenience as applied to housing.

It was, for these reasons, that the school plant was among the first in accepting such of the inventor's offerings as were suited to its needs. When temperature regulation first made its appearance, it was the schoolman who adequately recognized its economies. The vacuum cleaner found its earlier development through the experiments carried on in the schoolhouse.

While most of the improvements have been applicable to the equipment of other forms of housing or indoor activities, there have been some that have their application directly to the business of the school. The school desk is perhaps an example. Its evolution from the old-time, clumsy, wooden bench to a graceful desk, embodying hygienic considerations as well as convenience and service, is typical of the many improvements which have gone into the school plant as a whole.

These improvements assume a wide range, and while they primarily seek to promote general efficiency in the operation of the school plant, they make in the first instance for the physical, mental, and moral progress of the pupil. They deal with the elements of time and effort and seek to enhance the quantity and quality of the school output.

There was a time when it was the architect's business simply to plan a school and superintend its construction. Today, he must combine engineering ability of a high order with the purely architectural features of his service. There are systems of heating, ventilating, lighting, and plumbing to be considered. Building materials no longer consist only of wood and stone. There are special metals, composition floorings, paints, building hardware, and other items which may be employed advantageously.

There are also other considerations which come within the architect's province, such as the elements of safety, of acoustics, and of general sanitation. Safety may demand a fireproof structure, but it may also call for panic exit locks, fire exit door bolts, fire escapes, asbestos scenery and ample exits. The physical well-being of both pupil and teacher prompts temperature regulation, air washers and filters, humidifiers, scientific lighting systems, drinking fountains and window ventilators—all of which become a part of the structure itself.

But, there are many items of equipment of a modern school building which come within the discretionary authority of the school board. When it contemplates the physical health and comfort of the school inmates, it may provide drinking fountains, water sterilizers, vacuum cleaners, adjustable window shades, silent door closers, rubber, cork, and linoleum stairways and corridors, shower baths, etc., etc. In the direction of achieving economy in time and effort it installs program clocks, steel lockers, rolling or movable partitions, reversible windows, baling presses for waste paper, scrubbing machines, filing systems, telephones, and typewriters.

The genius of invention finds expression, too, in the portable schoolhouse, in economical schoolyard fencing, playground equipment, gymnasium equipment, laboratory furniture, liquid soap, paper toweling, air drying devices, and the like. The pens, pencils, inks and pastes may be no better now than they were two decades ago, but today you have the dustless crayon, the pneumatic inkwell, the patented book covers and binders, and other inventions designed to eliminate waste.

There is no doubt that globes, charts, maps and map cases, slate, natural and artificial, and book cases now used are more attractive and serviceable than those of a former day. Then, too, school authorities have brought to the service of the schools the phonograph, picture projection apparatus, and the radio, and the small portable piano, and what not.

The introduction of vocational studies has brought a variety of wonderful machinery and devices into the schoolhouse. All these represent the last word in the field of invention as applied to shop equipment.

The modern cafeteria, too, which has been introduced in the schools is a marvel in ingenious arrangement and equipment, its cooking apparatus, gas ranges, attractive table tops, and kitchen paraphernalia.

Surely, the genious of invention and mechanical skill have made a marvelous contribution to the health, comfort, and safety of those who frequent the American schools, promoting at the same time the cause of popular education and advancing the great march of civilization. The recognition of that genius and skill goes to the credit of the country's school administrators who have understood how to bring such genius and skill to the service of the school.

ARE SCHOOL ADMINISTRATION RETRENCHMENTS IN PROGRESS?

Much has been said in the public press during the past few years about retrenchments in the cost of school administration. The discussions have also been carried on by educational bodies and in the closer circles of the school administrators themselves.

The arguments advanced in favor of radical retrenchments in the main have been predicated upon the supposition, that gross extravagance in the administration of the schools existed and that large economies could be achieved without impairing the general efficiency.

But, time and investigation have taught that the administration of the American schools has after all been looked after with reasonable conservatism as to cost. The constant expansion to which the schools have been subjected has involved greater costs, but after all the question has hinged more largely upon the returns from the dollar expended.

And here no one has found radical retrenchment either possible or desirable. True, the professional workers have resisted salary reductions, and properly so. But, the administrators themselves have not deemed it either wise or expedient to seek salary reductions at the expense of classroom efficiency.

Nor can it be said that substantial reductions in the cost of schoolhouse construction have been made. The standards here created have been too well recognized to permit of any scrimping or cutting. The American knows what modern housing implies and will not tolerate niggardliness in a schoolhouse any more than he does in his home. He wants his children housed in a safe, sanitary, and utilitarian structure.

In some of the school districts of the West the school costs have strained the tax ability of the communities to an unusual degree, and while retrenchments had to be effected, it may be said that these were made in response to a pressing necessity rather than to the prevalence of any extravagance.

There are isolated instances where retrenchments were achieved through the elimination of certain studies, the enlargement of classes, and the construction of buildings upon a more moderate scale. But, on the whole there have been no perceptible reductions in the cost of maintenance or in contractions of the school plant.

The conclusion must be that while in exceptional instances extravagance may have been indulged in, the administration of the schools of the country as a whole, has in the main been reasonably economical and judicious. And it must be said to the credit of those in charge of affairs that they have not been swayed by ill advised counsel in the direction of a false economy.

In brief, the retrenchments which have been predicted have not materialized because there was neither cause or reason for them. The American schools have been kept upon reasonable levels of service and the cost involved has been fully justified.

HAS THE ERA OF SCHOOL PALACES ARRIVED?

The current magazine sold on the news stands occasionally adds to the regular diet served its readers some lurid discussions on the American schools. The subject is always a timely one, and discussions thereon, properly based and phrased, should always command attention.

But, the articles dished up by these magazines are usually held in a sensational key, dressed up with startling and unfounded statements, and designed to carry the impression that distressing discrepancies have been discovered and that the writer is the great Moses who has arrived in time to lead the educational wanderers out of the wilderness.

It so happens that those interested in thrashy literature are not particularly disturbed over what the schools are doing, and the more thoughtful do not lay much weight on the sputterings of modern sensational writers. Thus, the socalled popular magazine does not sway the trend of educational effort to any perceptible degree.

When educators connected with leading institutions of learning, however, air their views in high-brow professional magazines then a reading constituency may have the right to expect both accuracy in statement and soundness in conclusions. And yet, not infrequently, a college professor will for a congenial pastime condescend to discuss the common schools and attempt to solve their problems.

Thus, we find in a professional magazine of recent date an article on the problems in school finance in which the writer charges boards of education with gross extravagance. He says:

"While it is true that not enough money is now raised for the proper maintenance of schools, it is also true that the money now collected for that purpose is not always wisely expended. This fact is nowhere better illus-

trated than in the lavish expenditures on school buildings. Too many buildings of the showy, monumental type are now being erected. No one wants children housed in ugly buildings, but it is probably no exaggeration to say that commodious buildings, with ample facilities, well lighted and well heated, in a plain and simple style of architecture, could be erected for one-half the money now wastefully spent on the ornate structures in which we now take delight. It is the stock comment of visitors from abroad that we Americans spend lavishly on our school buildings but pay niggardly salaries to our teachers. It is probably true that we cannot afford both palatial school buildings and generously paid teachers. Which shall we now elect to retain? The answer is fraught with incalculable consequences to American education."

The writer of the above lines evidently has only a superficial knowledge of modern school architecture. There are, as every well informed school administrator knows, several large high schools in this country that have been designated as school palaces which tend to the ornate and the monumental. But, it is also well known that nearly every new schoolhouse, constructed within the past ten years, is both dignified in design and utilitarian in service without representing the waste of a single dollar.

And even considering the more expensive high schools constructed in several American cities in recent years it cannot be said that, stripped of their ornate and monumental character, they could have been erected for half their actual cost, and at the same time embody the utilities required. Such claims are simply preposterous and reflect seriously upon the business judgment of those in administrative charge of the American schools.

The statement, too, that foreigners comment upon the fact that we pay more for buildings than we do for teaching is far fetched. Some foreigner may at some time have expressed himself to that effect. But, what if he has? In Europe the schoolhousing is far inferior to our own, and the teachers are paid starvation wages. And that is not a "stock comment" either, but an actual fact. Besides, the American schools are not being measured by European standards.

No one will deny that in the construction of school buildings in this country instances may be found where extravagance has been engaged in and that the elimination of the ornate and ornamental might have saved some money. But, how can any one consistently condemn the school administrators of the land, as a whole, because in isolated cases some board of education has been extravagant?

And finally, who will rise to say that the ornate and monumental, as applied to the modern school edifices, does not possess a distinctive educational, social and economic value for an entire community? If this challenge is not accepted, then the charge of extravagance falls altogether. If it is accepted, then the proof must be forthcoming, and must be clear, tangible, and conclusive.

These charges of extravagance against the school administrators of the country have been uttered many times before. They are always loosely drawn, couched in general terms, and recklessly advanced. When concrete proof is called for, the accusers become silent. The charges cannot be sustained.

SCHOOL ADMINISTRATION ON A BIG BUSINESS BASIS

It has become a common practice in recent years to liken the management of public school systems with the management of private industrial enterprises. The analogy usually brings into play the perfections of the one and the shortcomings of the other, with the inevitable conclusion that public business is less efficiently managed than private enterprise.

There is little question that modern business has reached a high stage of efficiency and that the genius of organization has mastered mass production, and has effectually combatted leaks and wastage. Also, that the highest executive ability is behind socalled modern big business.

But, we are not prepared to admit that the government of the American schools, either as to the professional or financial considerations involved, is on the whole less efficient than is the conduct of private enterprise.

Let us see. The success of a private enterprise is measured by the financial stability and general prestige it has achieved, and by the earnings it has yielded. There are many industrial and commercial enterprises that enjoy the confidence of the investors and are looked upon as being financially sound, and are quite regular in paying out substantial dividends.

All this is admitted. But, how about the many business enterprises, individual and corporate, that do not measure up to the expectations of those who have financed them? Why do so many business enterprises, young and old, large and small, each year find their ending in the bankruptcy courts? Why the large percentage of failures?

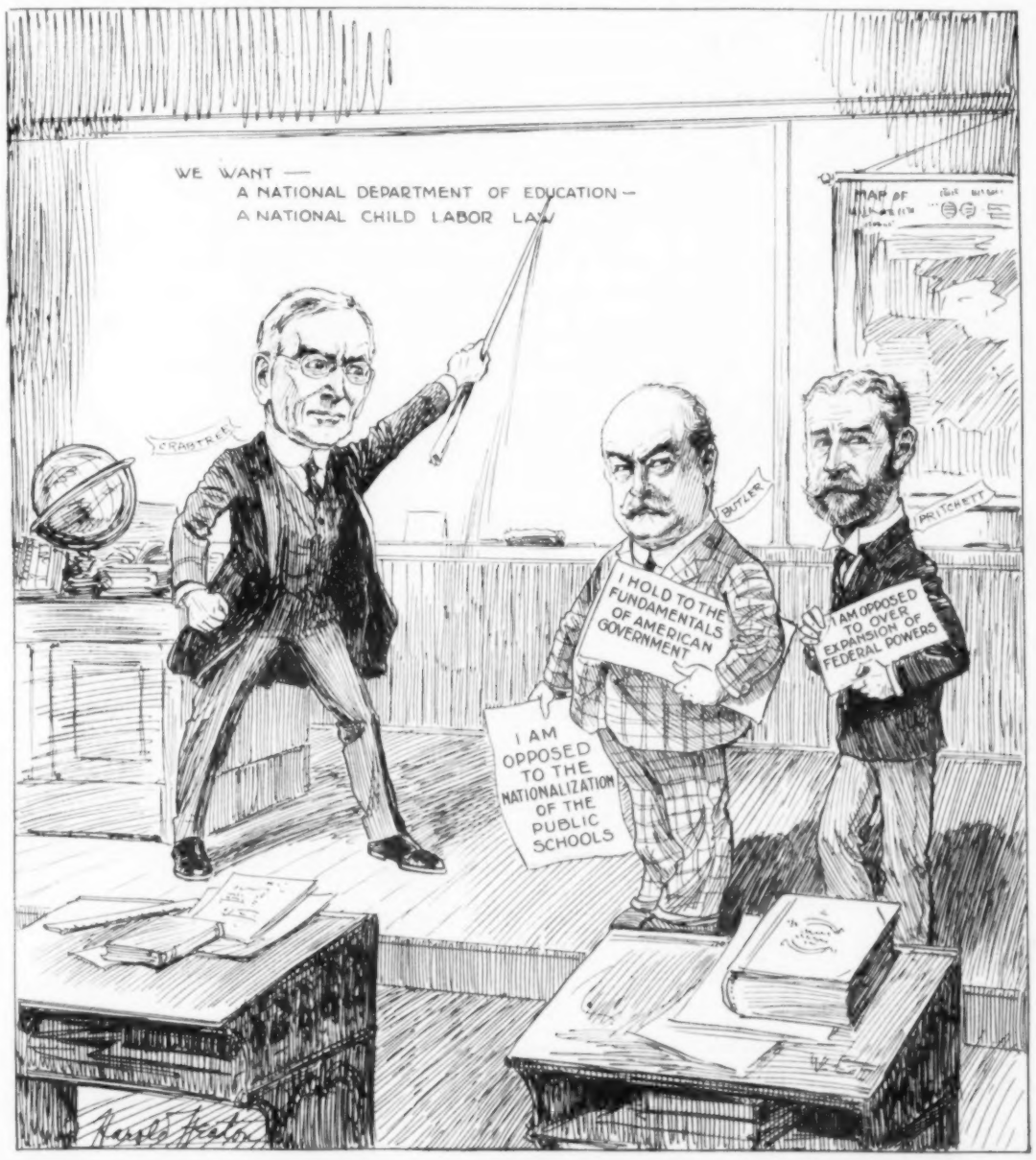
Some one may attribute all these calamities to the common exigencies of business, but those who have been identified with wrecked enterprises know that a lack of efficiency was more frequently the cause for trouble than the unexpected rise and fall of the economic barometer. Investors, too, have learned to their regret that even big business may fall into error. The country notes many vacant and neglected structures, industrial and commercial, that stand as monuments to huge blundering in business.

But, coming back to the subject of school administration. True, blunders have and are still being made. No one will deny this. A board of education is no more infallible than is the board of directors of an industrial enterprise. A schoolhouse may have been located upon the wrong site, it may have been planned too large or too small, the cost may have run over conservative estimates, the course of study may be too liberal, the number of teachers too many, etc., etc.

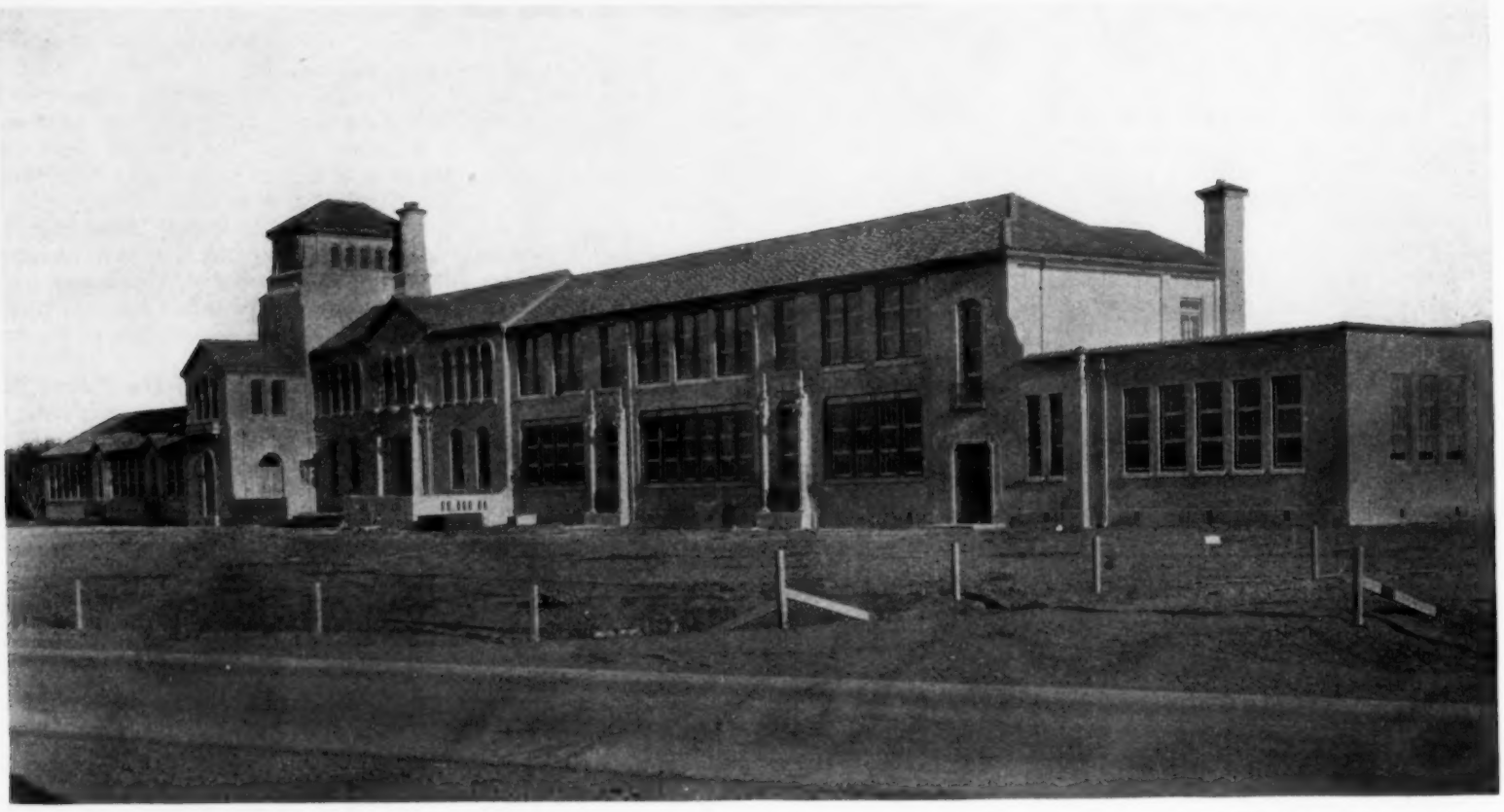
And yet when all is said and done, the fact remains that the nation's greatest enterprise—the education of its children—is as efficiently and economically managed as is any individual or private corporate undertaking. The financial blunders are fewer and the failures less in number and volume.

It may be well to make comparisons and liken a school system to an industrial enterprise, speak about executives, directors, and stockholders, but when such discussions are engaged in they must be fair and just. To hold that public business, as applied to school government, does not stand up favorably alongside of privately controlled and managed business undertakings has become an irksome habit.

At Lima, Ohio, a radio amateur received a report that a terrific windstorm would strike Lima that afternoon. A hasty conference prompted the school authorities to close the schools. The storm failed to arrive. But, a somewhat belated storm has overtaken the amateur.


WE WANT —
A NATIONAL DEPARTMENT OF EDUCATION —
A NATIONAL CHILD LABOR LAW
CRABTREE
BUTLER
PRITCHETT
I HOLD TO THE FUNDAMENTALS OF AMERICAN GOVERNMENT
I AM OPPOSED TO OVER EXPANSION OF FEDERAL POWERS
I AM OPPOSED TO THE NATIONALIZATION OF THE PUBLIC SCHOOLS

When the Doctors Disagree.



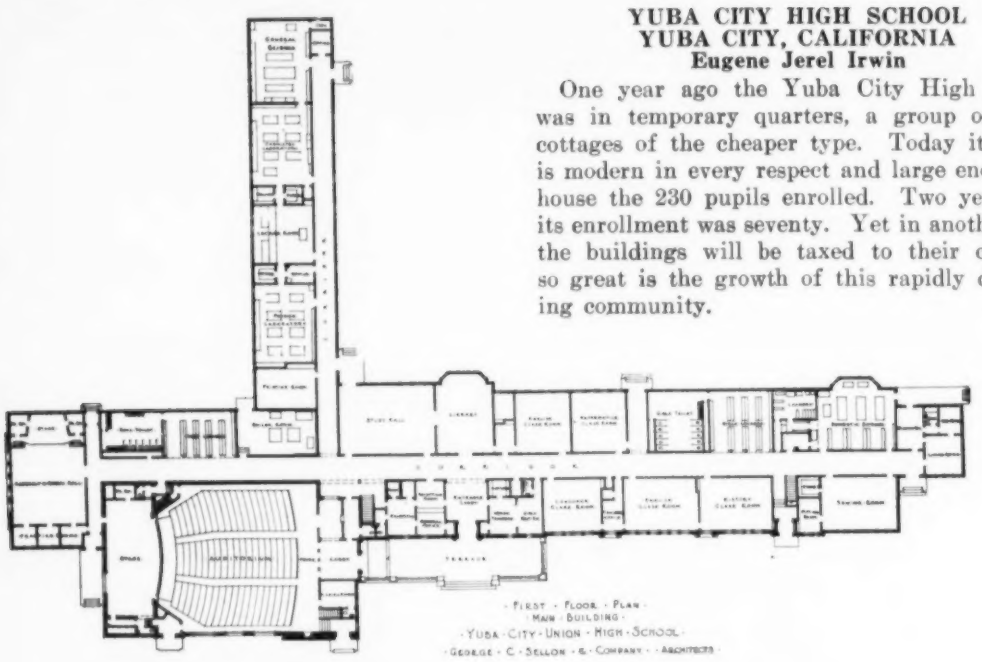
FRONT ELEVATION OF THE YUBA CITY HIGH SCHOOL, YUBA CITY, CALIF.

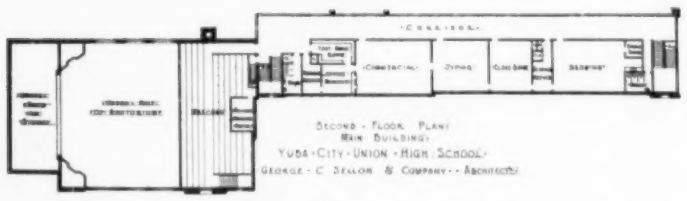
Geo. C. Sellon & Co., Architects, Sacramento, Calif.

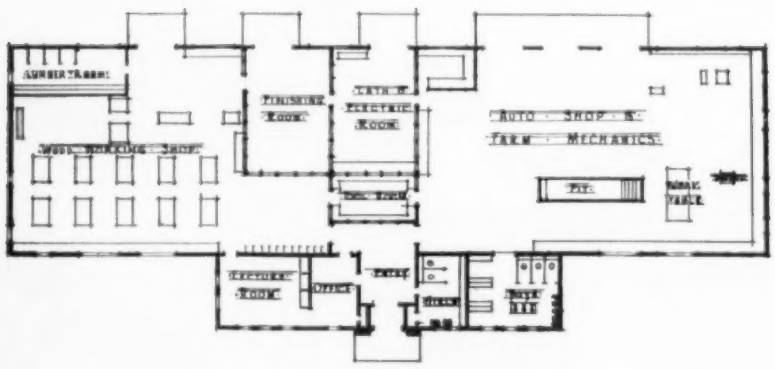
YUBA CITY HIGH SCHOOL
YUBA CITY, CALIFORNIA

Eugene Jerel Irwin

One year ago the Yuba City High School was in temporary quarters, a group of three cottages of the cheaper type. Today its plant is modern in every respect and large enough to house the 230 pupils enrolled. Two years ago its enrollment was seventy. Yet in another year the buildings will be taxed to their capacity so great is the growth of this rapidly developing community.







SHOP BUILDING, YUBA CITY UNION HIGH SCHOOL, YUBA CITY, CALIF.
Geo. C. Sellon & Co., Architects.

It is interesting to note that the shop, a frame building with stucco exterior, was completed first to provide necessary classrooms. Students were carried between the cottages, shop and a room or two in the local grammar school in busses. The spirit shown by students and faculty was incomparable while the work was hastened as rapidly as possible on the main building which was ready for occupancy in February, 1924.

Under the direction of Principal Cree T. Work, who started the splendid Venice Union High School in a bath house in 1914, and Mr. V. W. Cooley, a most interested man and clerk of the board of education of Yuba City, and the splendid architectural skill of George C. Sellon & Company, architects and engineers, a splendid plant has been constructed.

The main building cost $210,000. The shop, a separate unit, cost $20,000. The total cost for both, including equipment, was $285,000.

The growth of the student body was so great that at the last minute it was decided to make the main buildings and shops as complete as possible, leaving for a later date the building of the auditorium wing and the gymnasium, a

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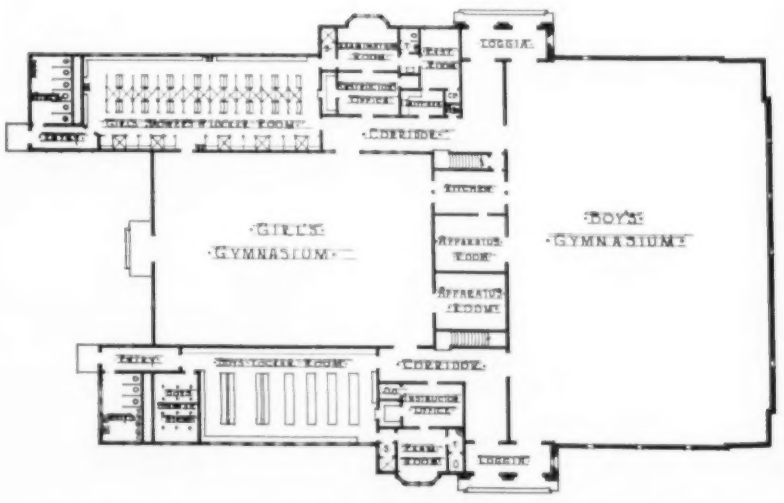

MAIN FLOOR OF GYMNASIUM BUILDING, YUBA CITY UNION HIGH SCHOOL, YUBA CITY, CALIF.
Geo. C. Sellon & Co., Architects.

How they tested Varnish at Peabody College—

"House Furnishing and Care" is one of the courses of the Home Economics Department at George Peabody College for Teachers, Nashville, Tennessee. In connection with this course, the Department decided to conduct a scientific and absolutely impartial test as to the relative durability of floor finishes.

Test Number One: a long, narrow walkway was constructed and marked off into twenty-two test sections. One-third of the walkway was finished with different brands of varnish; one-third with oil preparations; the remainder with paints.

A railing paralleled the walkway, thus compelling the several hundred students who entered the building *daily* to traverse the entire length of the walk. The amount of wear received was undoubtedly equivalent to many years' of ordinary use.

At the end of the testing period—approximately six months—the comparative durability of the different finishes was judged by faculty members and graduate students—seventy-three in all. Of the twenty-two test sections, number 5, finished with Valentine's Valspar, showed the least wear *and won the test!*

Test Number Two: the walkway was then taken up and placed in the garage as a runway for automobiles. For six months it was subjected to constant drenchings while cars were being washed. At the end of this period the different finishes were carefully judged—*and Valspar scored first place again!*

Not a drop of water had penetrated the wood of the Valsparred section, thus proving the *absolute waterproofness* and unequalled durability of the Valspar film. As for the other sections, the finishes were destroyed, allowing the water to soak into the wood.

These tests show why Valspar, Valspar Varnish-Stains and Valspar-Enamels are used in so many schools in all parts of the country. They prove absolutely that Valspar's wonderful endurance combined with absolute waterproofness makes it the supreme varnish for every use—indoors and out.

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VALSPAR
The Varnish That Won't Turn White

VALENTINE & COMPANY
Largest Manufacturers of High-Grade Varnishes in the World
ESTABLISHED 1832
New York Chicago Boston Toronto
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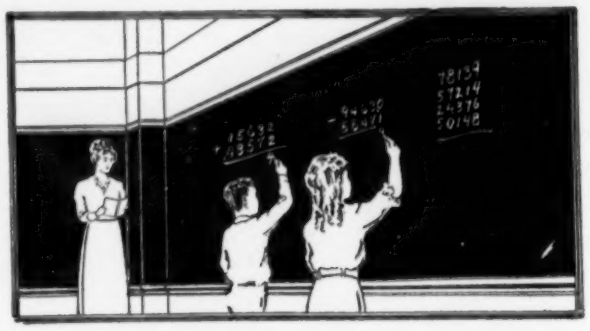
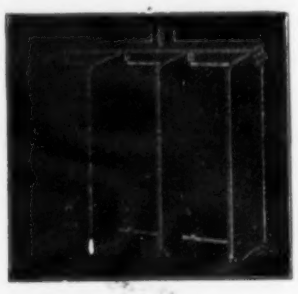
ALBION QUARRY NATURAL SLATE BLACKBOARDS

Are Black and stay Black. The only PERFECT writing surface.

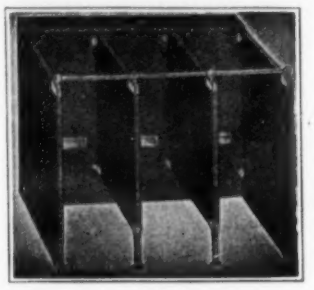
Sample and Booklet sent on request.



The "KEENAN KIND" Sanitary Slate Fixtures provide perfect Sanitation and Ventilation.



B-11½ S—Urinal



B-26—Closet

Large Illustrated Catalog for the asking

KEENAN STRUCTURAL SLATE COMPANY, Inc.

First National Bank Bldg., *BANGOR, PA.*

THE WISDOM OF PURCHASING

Does not consist in buying that which is offered at a "bargain price"—at the lowest figure of all.

Buying "cheap" and buying "economically" are two different things—that is why language has two different words for them.

We would like you to verify our statement, that our

Natural Slate Blackboards

Are the most economical you can buy, considering the word "economical" in its true sense. It is finished with a beautiful velvety smooth surface that does not become gray with age or use; that makes writing a pleasure and reading a relief to the eyes of the students and teachers. That is why our Natural Slate Blackboards combine the utmost efficiency with the utmost of economy.

These are but a few of the advantages. Before you spend a dollar for Blackboards, you should read our book "How to Judge, Specify, and Install Blackboards." Write for your copy today.

PENN'A. STRUCTURAL SLATE CO., Inc.

Worth Building Easton, Pa.

YUBA CITY HIGH SCHOOL, YUBA CITY, CALIF.

(Continued from Page 94)

separate unit. The construction of these is now only a matter of the time necessary to work out details.

On the basis of $285,000 as the cost, including equipment, the cost per pupil, based on a 600 pupil capacity, would be $47.50. The cost per square foot for the main building is $5.73, for the gymnasium $3.30, and for the shops $3.

The main structure is built in Renaissance style of architecture, of Denison hollow interlocking tile. The exterior walls are buff colored stucco trimmed in green, with a tiled roof.

Cabot's quilt sound deadening was used for all second story floors and for all partitions dividing adjacent classrooms. The plant is equipped with a vacuum steam heating system. As is frequently the case in California where window ventilation is common no other system was provided for. The floors are of the best edge grain pine which is finished with linseed oil.

The grounds contain twenty acres, allowing ample space for an athletic field and agricultural activities. Bleachers to seat 600 people were constructed by local labor unions without cost to the district, except for the lumber, which was purchased without profit from the lumber dealers.

The district runs eighteen miles south of Yuba City and westerly for approximately three miles. This district is covered by three busses capable of carrying from 25 to 40 students.

Some of the special features are as follows:

Girls' and boys' locker rooms open on the first floor hall where lunches can be eaten.

A balanced table, built free from the building in every way.

A girls' rest room and men and lady teachers' rest rooms.

An office safe or vault in the foundation of the tower at a trifling cost.

A system of teachers' offices. There are five of these, one for each three classes on the average with one general office for the principal. The latter has an outer office and a separate hall exit. The former are arranged as far as possible between classrooms. These supply a place for teachers who are free, to study or work, away from noise or other distracting influences. In speaking of this feature, Principal Work remarked that in business houses executives are provided places to work away from the confusion of the business. He asked, "Is not the high school a business? Should not conditions be made as nearly ideal as possible for efficient work?"

Altogether the plant is one of rare beauty and of such construction as to inspire both students and teachers to do their best for those who have so generously provided this magnificent educational workshop.

SCHOOL LAW

A BUILDING DECISION IN PENNSYLVANIA

—The Supreme court of Pennsylvania recently rendered a decision in the case of Orth v. Board of Education, concerning the payment of a firm of architects and the rights of the board in the matter of contract. The plaintiffs, a firm of architects, entered into a contract with a board of education for the preparation of plans and specifications and supervision of the construction of a high school. The contract, among other things, specified that the board should pay the architect six per cent upon the entire cost of the building, payments to be made as follows: One per cent after the final preliminary study is made; two per cent after the completion of the working drawings and specifications; one per cent in monthly installments prorated in accordance with the monthly certificate for payment to the contractor, and one per cent upon the completion and acceptance of the building.

The contract provided further that the board reserved the right to terminate the contract in case of the death of the architect or upon fifteen days' notice, and also that in the event of any termination of the contract, the architects should be paid full compensation of the percentages due. The board was given the right to reject any and all bids.

The architects made an estimate of the work with the result that the lowest bid for construction greatly exceeded the previous estimate and was far beyond the amount of funds available for the school. The board promptly rejected the bids, without objection on the part of the architects. The matter was temporarily abandoned, and upon the death of one of the architects, the contract was rescinded in accordance with the clause in the contract giving the board the right of rescission.

In a suit for compensation due the architects for the preliminary work performed by them, various questions were considered by the court. The court held that the words "they shall be entitled as full compensation to the percentages then due" refer only to the particular percentages applicable to the situation as it existed at the time, and that the words "percentages then due" should be given their usual meaning, and that if the building was not erected, only three per cent was to be paid for the preliminary study and for the preparation of drawings and specifications. There was, however, some work done, and for this the plaintiffs were entitled to six per cent of the actual cost.

The court further held that it was erroneous to estimate the three per cent on the excessive cost, arising out of the unusual conditions prevailing when the bids were received. As pointed out, one per cent was due when the final preliminary study was adopted, and an additional two per cent when the working drawings and specifications were completed and adopted. There was then no other cost of the building,

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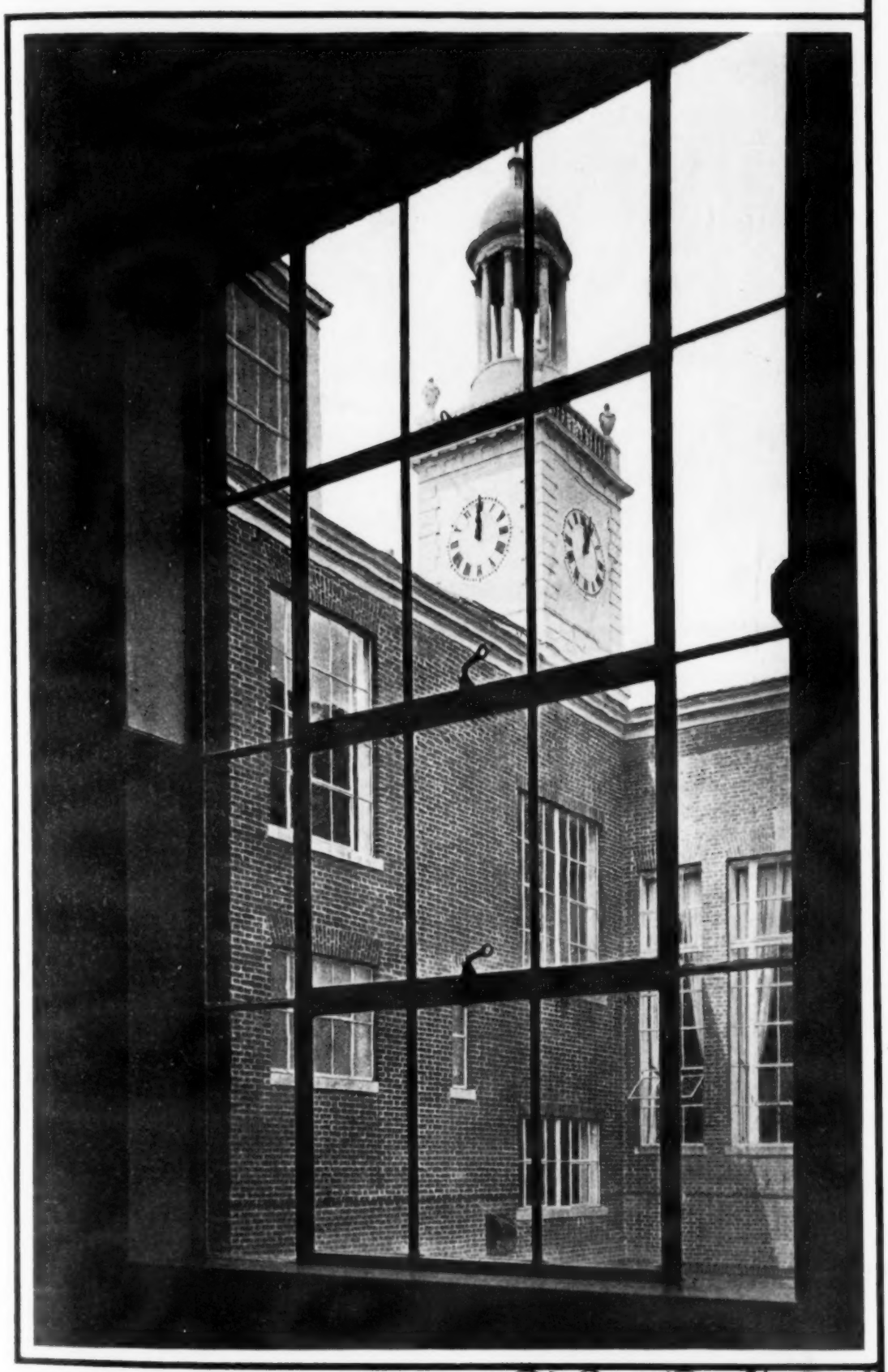
ARCHITECTURAL FENESTRA



South Side High School, Rockville Center, Long Island.
Architect, Huse T. Blanchard

FEW materials in school construction have greater importance than the windows. They have a four-fold duty to perform—they must provide adequate light without consuming too much wall space; they must furnish ample ventilation without draft in both winter and summer; they must be fire-proof and they must conform to the architectural motif of the building.

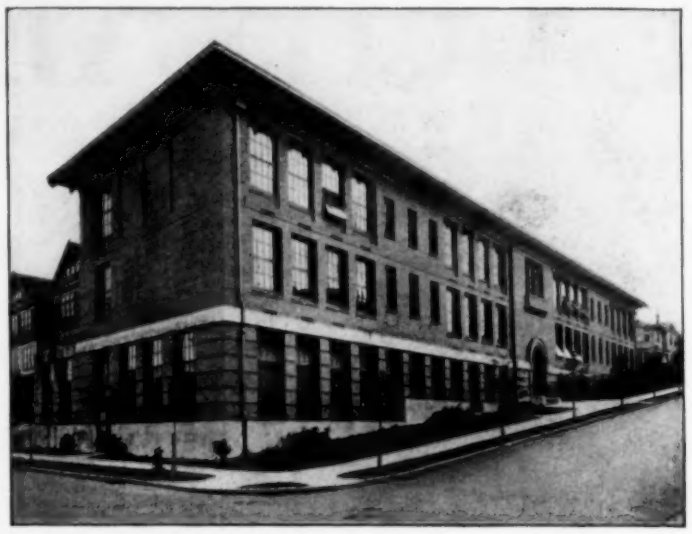
That Fenestra Reversible Windows have fully met these exacting conditions is evidenced by the fact that they have been chosen by school officials and school architects in every part of the country.

These solid steel windows have many design and construction features which account for their country-wide popularity. The framing member is designed to give greatest strength and rigidity with a wide outstanding wing for anchorage in the masonry. The ventilators are balanced with a nice precision and open or close with unusual ease. Two point flat contact weathering is provided where the ventilator meets the frame, while extra long downstanding legs afford an effective drip at the head and sill. Bronze hardware gives an added touch of refinement.

But these and many other good window qualities are not the only reasons for their frequent selection. The five-fold Fenestra service is as important as the product itself. It is a service which embraces (1) Layout (2) Estimating (3) Detailing (4) Delivery (5) Erection. The Fenestra organization located near you is prepared to render this service locally—engineers you can reach quickly, call to your own office, talk to personally. Let us put you in touch with this local organization, and send you a copy of "The Blue Book of Steel Sash."

DETROIT STEEL PRODUCTS COMPANY
Division of Architectural Construction
R-2266 East Grand Boulevard
DETROIT, MICH.

Fenestra
REVERSIBLE WINDOWS



Lowell School, Seattle, Wash.
Sound-proofed with Cabot's Quilt.
Edgar Blair, Architect, Seattle.

Sound-Proof Schoolrooms

Civilized school-house construction now recognizes sound-deadening in floors and partitions as a necessity that is second only to light and ventilation. Quiet rooms are essential for both pupil and teacher.

Cabot's Quilt

is the standard deadener—sound-proof, sanitary and fire-resistant.

Sample of Quilt and book on School-house Deadening sent on request.

Samuel Cabot, Inc., Mfg. Chemists, Boston, Mass.

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"CENTURIES OF SERVICE"
PYRAMID NATURAL SLATE BLACKBOARDS

NATURAL SLATE FOR BLACKBOARDS

Scores of years later, you'll find Natural Slate Blackboards in as fine condition as the day they were installed.

School authorities, everywhere, are cutting their expenditures by using "first cost the only cost" Natural Slate Blackboards.

Slate outlasts the Building.

An interesting bulletin,—"Natural Slate for Blackboards," — has been prepared for you. Write for it at once.

Natural Slate Blackboard Co.
108 ROBINSON AVE. PEN ARGYL, PA.

PASSING OF SUPERINTENDENT WAGNER

Dr. Charles A. Wagner, educator and author, died at Chester, Pa., on November 21, 1924. He suffered a nervous breakdown two months previous which was followed by a stroke of appoplexy and resulted in death. At the time of his death he was the superintendent of the Chester schools.

The career of Dr. Wagner has been one of persistent application and service. In his efforts he emphasized the relations between the several professional factors, realizing that the efficiency of a modern school system hinged not only upon the individual ability of the teacher, but also upon the supervisory stimulus that went into their work.

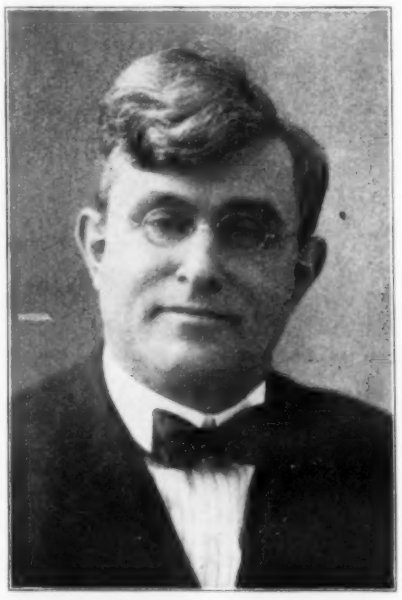
These efforts found expression in some of the most helpful literature ever produced on the subject. More than a score of articles were written by him within the past several years on various phases of school supervision. He made more clear than had been done by any other author the finer distinctions of supervision as an essential part of school administrative effort.

His studies finally culminated in a book entitled "Common Sense in School Supervision" which found universal recognition among the educators of the country as a work which went to the very heart of the subject. It proved a distinct contribution to the educational literature of his time.

Dr. Wagner began his career as a teacher in a rural school, and step by step rose through various stages of promotion until he reached in 1913 the position of state commissioner of education of Delaware. This was an appointive position, newly created by the legislature, which he held through the grace of the governor of the state. The compensation was only $2,000 a year. He held the commissionership until 1917 when he came to Chester, Pa., to assume the school superintendency of that city.

Charles Adam Wagner was born at Hamburg, Pa., December 12, 1863. He received his early education in the town of his birth and later attended Ursinus College and the University of Pennsylvania, graduating from the latter. During the period of 1880 to 1883 he taught school in Montgomery County. From 1883 to 1890 he held a position in the Philadelphia post office and then resigned to become the proprietor of a small general store at Graterford.

In 1896 he enrolled as a student in the state normal school at West Chester, and after a year's study assumed the superintendency at Cheltenham. He served here for six years when he returned to the normal school as an instructor. During all his career as an educator his ability as an organizer was pronounced. He was, therefore, ideally fitted to serve in the capacity of superintendent.



THE LATE DR. CHARLES A. WAGNER,
Chester, Pa.

With the passing of Dr. Charles A. Wagner an educator of more than ordinary ability and service is removed from the field of American education. His work will live after him. George D. Mitchell, president of the Chester school board, said: "There is no question that as an educator Dr. Wagner was a big man." George W. Pedlow, principal of the Chester high school, said: "He was a man with a wonderful mind. His whole soul was in his school work." Assistant Superintendent Samuel C. Miller said: "Pennsylvania has lost a leader in education. His life was dedicated to the cause of children."

Dr. Wagner is survived by his widow, Mrs. Sarah Wagner, a son, Dr. Ernest C. Wagner, a member of the faculty of the University of Pennsylvania, and Miss Edna M. Wagner, a member of the Chester high school faculty.

SUPERINTENDENTS' SALARIES, 1924-25

A recent survey made by the Massachusetts Department of Education reveals the fact that the salaries of superintendents of schools in Massachusetts are steadily advancing. Increases varying from $100 to 1,500 have been granted during the past year. The average increase was $330.

Salaries in relation to population now average as follows:

Cities of over 50,000 population	$6,961
Cities of 35,000 to 50,000 population	5,275
Cities of 20,000 to 35,000 population	4,500
Cities and towns of 10,000 to 20,000 pop.	4,006
Towns under 10,000 population **outside** superintendency unions	3,309
Towns under 10,000 population **in** superintendency unions	3,007

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Lawrence, Mass., Elementary School, JamesAllen,architect. *Gold-Seal* Battleship Linoleum—one of the several types of Bonded Floors—makes a sturdy, quiet and harmonious floor in the kindergarten.

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The selection of floors which combine these varied requirements is no easy matter for the layman. It is to meet just such difficulties that the Bonded Floors Company has developed its unique service.

Everything that contributes to the producing of long-wearing, noiseless, beautiful floors—advice from skilled flooring engineers, guaranteed flooring materials, scientific installation by expert workmen—is included in the service of Bonded Floors Company.

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Roosevelt High School
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This beautiful School completed in 1923 and considered one of the finest on the Pacific Coast was built under the Supervision of C. W. Dickey, Architect.

Ample provisions were made so that the students could enjoy maximum security and convenient storage for their coats, hats, books and sundries.

The Oakland Board of Education knew that sturdy lockers more than pay for themselves, while makeshifts are but a false economy. Their thorough investigations resulted in orders to Durabilt. 1096 lockers were bought for Roosevelt High, 792 for McClymonds and 1172 for University High.

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3—Five-knuckle, full-looped, double-wear "strap" Hinges.

4—Scientifically reinforced, rigid Door.

5—Extra heavy, countersunk riveted Door Frame.

6—Unusually large Ventilating Louvres.

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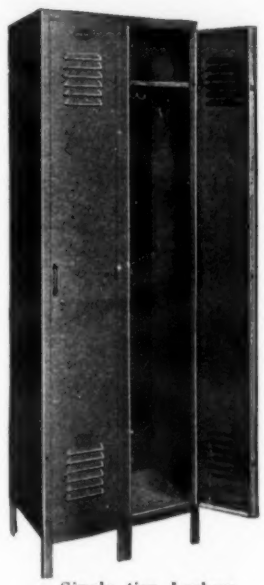

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SCHOOL BOARD NEWS

NEW YORK COMBATING SCHOOL CROWDING

For the first time since 1918 the number of children in the New York City schools on part time and double sessions in the grade and high schools has decreased rather than increased, as compared with conditions prevailing during the preceding year. So reports the bulletin of the Public and the Schools, and adds:

"Before 1917 the amount of part-time in these schools had been reduced from over 90,000 in 1912 to approximately 41,000 in 1916. After 1917, however, the congestion steadily and rapidly increased. Following are the official figures as of September 30th each year, exclusive of the number of children in over-sized classes:

	Part-Time	Double or Duplicate Sessions	Total
1917	41,493	76,577*	118,707
1918	38,165	173,255*	211,420
1919	52,280	179,491	231,771
1920	83,728	174,231	268,259
1921	122,977	194,529	317,506
1922	153,410	207,671	361,081
1923	152,415	225,579	377,794

*Several thousands of these children were not on double session programs as now understood, but on programs which provided a six hour day. These programs were abolished by the present administration.

"On September 30th a year ago the high water mark was reached, with 377,794 children on part-time or one of its substitutes. This was over three times as great as at the beginning of the present city administration six years before. The reason for this tremendous increase was, of course, the failure to match annual increases in enrollment with annual increases in school seating. Each year thousands of new pupils register for the first time, and each year larger numbers of children stay longer in school, thereby adding to the enrollment in the senior and junior high schools and in the upper elementary grades. Both of these types of increase are wholesome and inevitable, but they have seriously taxed the authorities in prosecuting their building program. Until this year, school construction failed completely to cope with the growth in school population."

AMONG BOARDS OF EDUCATION

—Grand Rapids, Mich. The school board has appointed a committee of four members to undertake a study of school finance. The work of the committee will be to study expenditures and to advise the board as to methods and possible economies.

—The school board at Farmington, N. Mex., has prohibited dances in the high school building.

—Pittsburg, Kans. A school board controversy, carried into the lower court where a judgment of $75 was rendered against the board, has been appealed to the district court. The case is that of Joseph Descamps against J. N. Kelly, treasurer of School District No. 62. It appears that at the annual meeting in April, the electors of the district allowed a bill for $40 for labor performed by Descamps and another for $35 for taking the school census. Later, Kelly, as treasurer of the district, refused to pay the warrant voted at the school meeting. Descamps, clerk of the board, and J. V. O'Leary, director, signed the warrants for the money. At a hearing in the lower court, a judgment for the amount was awarded.

—The State Board of Education of Texas has sustained State Supt. S. M. N. Marrs in the case of Mrs. O. N. Smith against the board of Yoakum County. Mrs. Smith was a single woman when she signed a contract to teach. When she contracted matrimony the school board dismissed her on the ground she had violated her contract. The state superintendent sustained the school board and later the state board sustained Mr. Marrs.

—Resolutions proposing to give college and normal school graduates the right to teach in elementary or high schools in Washington have been passed by the State School Board Directors' Association. Under the present laws, graduates of colleges and normal schools may teach only in high school, while graduates of four-year normal schools are limited to the elementary schools.

—Independence, Mo. The school board has adopted a rule providing that no donations shall be taken in the city schools, except in case of flowers for the sick or dead. It is found that with the growth of the schools, donations for charity have grown to such an extent that they have become a nuisance.

—Denton McBean, recently suspended from the Lewis and Clark high school, Spokane, Wash., on the ground that he is married, has been reinstated as the result of a decision given by County Supt. A. J. Simpich. Mr. Simpich held that a person does not cease to be a child within the meaning of the law by a mere act of marriage. He believes the legislature did not intend that a person should be denied the advantages of an education merely because he is married before he arrives at the age of 21, and he, therefore, holds that Denton McBean is still to be considered a child within the meaning of the law.

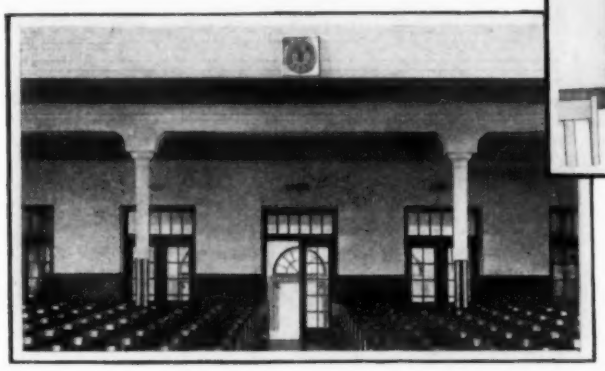
—Rochester, N. Y. The common council of a city must levy the full amount asked by a school board, according to a decision of the Appellate Division of the Supreme Court in affirming a previous decision directing the Jamestown council to levy the full sum of $744,000 as requested by the board in August. The decision means the end of a controversy which has raged in Jamestown.

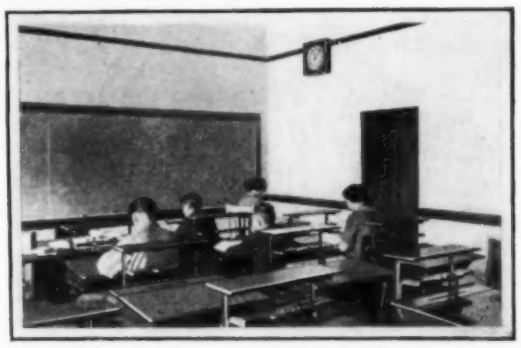
It appears that at the time the budget was presented by the Jamestown school board, the council refused to levy the tax on the ground that it was too high. Failure of the school board and council to come to an agreement on the matter caused a long delay and threatened to prevent the opening of the schools. The council then struck from the budget $65,000 and proceeded to levy the remainder of the tax, reducing the rates from $23.33 on each thousand dollars to $21.17. The board asked for a mandamus compelling the council to levy the full tax and it was granted. Later the council appealed the decision but lost when the final decision was rendered.

(Continued on Page 103)

The Chattanooga High School,
Chattanooga, Tenn.
Architect—Mr. R. H. Hunt of Chattanooga
Principal—Mr. W. T. Robinson

(At right)—"C" Master Clock and four circuit Program Device placed conveniently in the Principal's office controlling thirty-two International units.





(Above)—The Auditorium, with International Secondary Clocks; (at right)—A typical classroom.

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Investigation of time equipment experience in both old and new schools will reveal the specific reasons for faith in International Systems. We recommend this sort of an investigation to School Boards, Architects and Builders who are seeking the best for their jobs.

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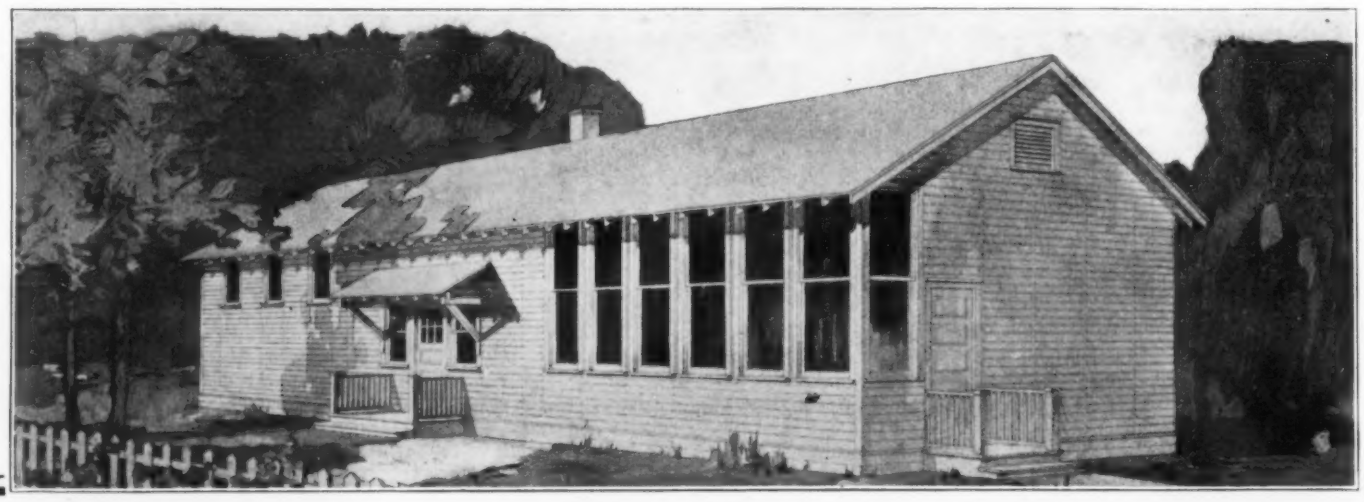

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Smith's Improved Exit Locks Are the Best Locks Made for Schools, Theatres, and Industrial Plants

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Our Gravity Exit Lock is the most perfect Mechanical Expression of the Exit Lock Idea that has ever been developed. It is the Exit Lock with Two Locks and without a single Spring in either Lock.

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It is the Exit Lock with Lever Action at the Crossbar to open the Door. There is No Spring Action and no Spring Tension. It is the One Exit Lock of Unfailing Operation, built on Everlasting Principles for Everlasting Service.

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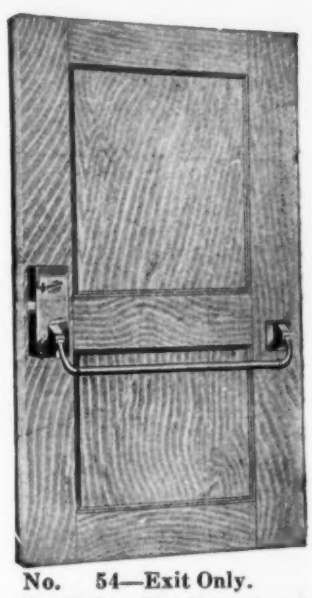

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Now made by **The Steffens-Amberg Co.** 260-270 MORRIS AVE. NEWARK, N. J.

HARDWARE MANUFACTURERS

(Continued from Page 100)

—Orange, N. J. High school students belonging to fraternities in violation of a state law have been urged by Supt. Patrick to abide by the spirit as well as the letter of the law. Mr. Patrick called attention to the prohibitory legislation and pointed out that the intent of the law was to exclude schools from secret organizations, and, therefore, it was obligatory that they refrain from affiliation with them.

—The Supreme Court of New York State has rendered a decision upholding the salary schedules of the New York City education department as against those of civil service grade. Suit was brought by the federation of associations of employees of the board of education to determine whether the municipal civil service commission had acted legally in witholding part of the salaries of employees of the department whose maximums in the department schedules were beyond those established by the civil service commission.

The case involved the maximum salary grades of the department of education and those of the civil service commission established for certain lines of work. The civil service commission contended it was within its rights in refusing to pay beyond its maximum of $2,761.

The court, in its decision, pointed out that under the act of 1920 the schedules and conditions adopted by the board of education supersede the classification of the civil service commission, and that the maximum salary of $2,160 used by the commission is no longer determinative of the question whether or not a clerk must pass an examination before he can receive a salary in excess of $2,160 per annum. It was evidently the intention of the legislature to give the school board a wider latitude in the classification of its employees and the fixing of their salaries.

—Galena, Kans. The school board has passed a rule prohibiting the driving of automobiles on school grounds.

—East Moline, Ill. The school board has prohibited smoking in school buildings. The members took the initiative by dispensing with smoking at their own meetings.

—Racine, Wis. The school board has prohibited the selling of tickets for entertainments by school children. The rule became necessary because of numerous complaints from parents.

—Flint, Mich. The school board has adopted strict rules governing the purchase of supplies. In the future, all purchasing must be done through the business office and not upon the O. K. of any faculty member. Faculty members are permitted to confer with the supplies committee relative to their needs for supplies, and duplicate copies of all orders placed are given to interested faculty members.

—Hagerstown, Md. Offers of reward have been posted by the school board for information leading to the arrest of marauders of school property. Midnight invaders of schoolhouses have demolished textbooks, charts, maps, and other valuable equipment. It is found some schools are visited regularly as meeting places while others are visited only intermittently.

—Chicago, Ill. The school board has recently approved two important amendments to its rules and regulations. Superintendent McAndrew's amendment compelling teachers to meet with their principals outside of school hours was passed by a vote of six to one. Another amendment invalidating principals' certificates more than six years old was also approved by a similar vote.

The rule making mandatory attendance of teachers in meetings called outside of school hours provides that such meetings shall be held for 45 minutes on any school day except Friday. It was the outgrowth of the difference of opinion between the teachers and the superintendent which terminated in September, with the refusal of Mr. McAndrew to call the council meetings.

—Davenport, Ia. The school board has approved a plan looking toward the erection of a permanent stadium for all community and school athletics. The project would involve the erection of permanent reviewing stands for 15,000 spectators, parking space for five thousand automobiles, and space within the enclosure for ball fields, track meets and athletic events. The estimated cost of the project is $75,000, or $5 per seat.

—Indianapolis, Ind. Following a secret session, the school board has dismissed George Rickes, superintendent of buildings and grounds, Julius Emhardt, his chief clerk, and Ralph McCarty, purchasing agent. Mr. Rickes and Mr. Emhardt are to be given hearings before the board at which time they will be invited to make statements in support of their positions in the matter.

—Chicago, Ill. School administrative procedure is to be standardized in the immediate future, according to a statement of Supt. William McAndrew. The matter of preparing a standard, or norm, has been taken up with Supt. McAndrew and is being sponsored by the principals of the several schools.

A number of points which will collectively comprise the norm have been prepared. These points which have been prepared for approval or disapproval, will be printed and distributed among the heads of the different schools. Among these are the following:

Promptness and accuracy in reports by teachers and principals and in compliance with instructions.

Enough but not too many teachers' meetings.

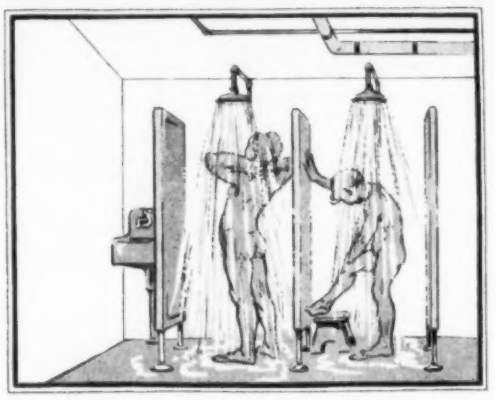
THE FIRST REQUIREMENT OF GOOD ARCHITECTURE

It is one of the commonplaces in architecture, in the judgment of designs in architectural competitions—I think that is not commonly realized—that the jury will attach greater weight to plan than to elevation; and if there is a slight difference in merit between two plans, it would take an extraordinary badness in the elevation of the better of those designs, and an extraordinary beauty in the elevation of the second best design to give that second best plan the first place in the competition.

The best architectural jury will look first at the plan, to see whether it is going to produce the utility that will meet the purpose, and whether it is going to be economical in its construction or not. They feel a security in doing that because of the fact that a good plan will produce a good elevation in competent hands. Hence the architect's major responsibility and the thing that occupies most of his time and study is the problem of providing something practical, something that will satisfy economic requirements, and he can best produce a work of beauty out of those conditions.—Dr. Warren P. Laird.

Toconamel Was Washed 123 Times Every Day

Not because it was so dirty, but because it was protecting the walls of a shower bath at the Y. M. C. A., at Norfolk, Nebr. Every time a boy took a bath, Toconamel was washed also. Floorkote on the floor also received the same treatment. Read what their General Secretary, Mr. John G. Moore, has to say about these products.



"We have used your Toconamel on our shower bath walls and your Floorkote on the floors, and have found that your products hold up better than any paints we have ever used. We have but four shower baths in the building and they are used about 125 times every day. Before we used your product we refinished our showers every six months. Toconamel has been on for over a year."

JOHN G. MOORE, *Gen'l Sec'y.*
Y. M. C. A., Norfolk, Nebr.

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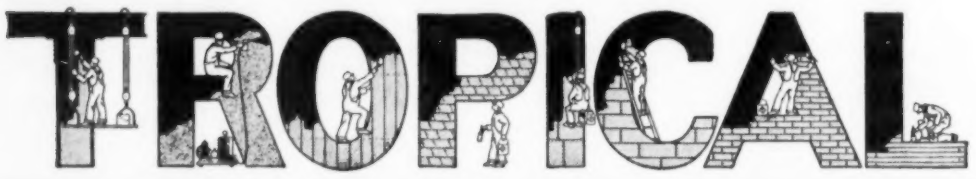
Toconamel is just the thing for walls and ceilings of hallways, playrooms, cafeterias, kitchens, gymnasiums, domestic science rooms, wash rooms, shower baths, swimming pool rooms and other surfaces which must withstand hard wear and tear and frequent cleaning.

Toconamel is sold direct to school boards at reasonable prices, consistent with its unusual quality. The coupon makes an easy way for you to ask for quotations, color card and complete facts. Also, check other items in which you are interested.

The Tropical Paint & Oil Co., 1228-1270 W. 70th St., Cleveland, Ohio



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Compliance with direction for fire drill.

General conditions of schools and grounds, including the amount of paper and debris left about the buildings, marks on walls and books.

Adequate plan and progress reports by teachers, which include a written record of school plans and progress.

—The board of education of Indianapolis, Indiana, dismissed three employees from its administration department. The Indianapolis News in commenting upon the action says: "Efficiency is an overworked word, much used by political campaigners, experts and others, but if the school board can apply it successfully there is no reason why personal interest should stand in the way. The dismissal of three employes is a move in the interest of school efficiency. Better service at lower cost is the aim. Useless offices, or offices believed to be useless, are to be abolished. Why not? Relatives of commissioners may be efficient or may not—just like other folks. But if their services are not needed they should go—again just like other folks. Taxpayers are called upon annually to provide great sums for the public school system. They are not concerned about who administers the school system's affairs but they are concerned about how they are administered. The school board was in a position to know whether discharging three men would improve the service. The public must assume that the move was in the right direction and that if an additional readjustment is necessary the board will not hesitate to act."

—The Seattle, Wash., board of education in a recent bulletin, edited by Superintendent Thomas R. Cole, shows that while the city population has increased 334 per cent since 1900, the school growth has increased 424 per cent. The gain in high schools during that period was 1539.8 per cent.

—At the conference of Rhode Island school officials, held at Providence, Mrs. Charles H. Remington of the East Providence school committee delivered an address entitled, "The Relation of the School Committee to its Community." Supt. Isaac O. Winslow of Providence spoke on "The Adjustment of Teachers Salaries." Hon. Walter E. Ranger, the state commissioner of education was also one of the speakers.

—Chicago, Ill. Upon the suggestion of Mr. J. C. Christensen, the school board has given authority for the employment of Mr. Clarence D. Kingsley as an educational consultant for half-time service amounting to twelve days in each month. Mr. Kingsley will assist the board and its architects in the preparation of standard layouts and equipment for the group of junior and senior high schools, and technical high high schools, about to be erected.

—Chicago, Ill. Mr. William K. Fellows, a member of the board of education, has asked that his membership be terminated on or about January first. Mr. Fellows was chairman of the committee on buildings and grounds.

—Dayton, O. The city planning board has agreed to cooperate with the board of education in the selection of suitable sites for the new buildings to be erected from funds provided by the $4,000,000 bond issue. A detailed survey of the city is planned to determine "ideal" as well as practical locations for school sites, parks and playgrounds.

—The Superior court of Putnam, Conn., has rendered a decision to the effect that the town selectmen of Thompson did not act illegally in paying members of the school committee for their services. Suit was brought by E. J. Keegan, a member of the school board, who sought to enjoin the selectmen from the payment of such bills and to recover money paid out in this way. The decision has a far-reaching effect, as more than half of the towns in the state follow this practice.

—A testimonial dinner was recently given in honor of President George J. Ryan of the New York board of education by the leading business men of the metropolis and attended by 1,700 persons. The tenor of the evening was commendation for the energetic manner in which the board of education, under its present leadership, has handled the gigantic school problem. "We do not expect commendation," said President Ryan in response to tribute extended. "We expect criticism, but we ask that be constructive. Our children are the most important asset of this city. In their behalf I invite cooperation from all quarters. More than that, in their name I demand that all citizens evidence a wholesome interest in their welfare. Let this wholesome interest be manifested in constructive effort and suggestion rather than in partisan carping criticism."

—The joint board of education for South Orange and Maplewood, N. J., has issued a bulletin which contains a complete roster of the teaching force, the graduating classes, and the school calendar for the year. The board is made up of nine members as follows: President, Harvey I. Underhill; vice-president, E. Morgan Barrackele, Harold M. Beattie, Edward W. McDonough, George E. Low, H. Clyde Snool, Aubrey J. Sidford, Mrs. C. N. Clark, William B. Sayer; district clerk, Miss Margaret M. Pryor; custodian, George Garrabrant.

—The members of the Pawtucket, R. I., board of education are dealing with the problem of overcrowded schools. The apathy of the citizenship is the stumbling block toward better school support. Joseph T. Curran, a member of the board says: "Apparently the only way that the citizens will be brought to a realization of conditions will be when their children are turned away from the schools, and apparently the only way that we can get satisfaction from the city council will be by going to the courts."

—The board of education of Oklahoma City, Okla., had prolonged its session to the midnight hour when somebody discovered that the new day would be a legal holiday and that all transactions within that day would prove illegal. The board adjourned promptly a minute before the midnight hour.

—The Hoboken, N. J., board of education will no longer permit the use of its high school auditorium for bazaar purposes by outside organizations.

—An increased tax on inheritances and foreign insurance companies in support of the state school funds is favored in Michigan. "There are two general phases of these proposed tax laws to be considered. The first one is what the increased revenues these two measures would add to the primary school fund would mean to the schools and to the taxpayers. On the basis of present business statistics the primary school fund would be increased something over $4,000,-

(Concluded on Page 106)

To Classroom or Power House in 5 Seconds

The new pupil twisted his cap and smiled uneasily as the principal examined the credentials. At last he found his voice. "May I start this morning, sir?"

"Hm—why—yes, Henry, everything here seems to be all right. I'll tell Miss Mason that you'll be with her the next period."

Turning to the P-A-X telephone on his desk, the principal lifted the receiver and gave the dial two quick turns. At once he had a direct connection with the history teacher in room 48. "Good morning, Miss Mason, I have a new pupil for you, next period. Henry Carrothers is the name—You wish him to bring a notebook and pencil?—Thank you, Miss Mason. What's that? The room is chilly? I'll attend to that for you at once."

Releasing the connection to Miss Mason, the principal dialed the number of the power house. Again the P-A-X gave him an instant, accurate and automatic connection. Again the P-A-X made it convenient for him to discuss and settle at once a matter of school business. Time was saved and messenger service avoided.

In hundreds of modern schools, the routine of administration is facilitated by this, the fastest and most complete intercommunicating system known. At any hour of the day it permits principal, teachers and building employees to have direct telephone conversation with any room or department of the school. Connections are made in 5 seconds or less. There is no operator to cause delays, errors or "listen in" on conversations.

Besides interior telephony the P-A-X includes a conference wire (by means of which emergency "meetings" may be held between the principal and any number of teachers with everyone seated at his own desk) and other specific services to speed up routine and heighten the efficiency of the entire staff.

Our latest product is a simple, inexpensive P-A-X system, especially designed for the smaller school in which the larger, more comprehensive P-A-X is not justified. The system provides the advantages of the P-A-X service at the lowest possible cost.

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GUARANTEED, against defection in manufacture and material.

Sample and Special Proposition will be forwarded to Operating School Officials, on request.

THE J. B. MILLER KEYLESS LOCK CO.
KENT, OHIO, U. S. A.

(Concluded from Page 104)

000. That would mean an increase of $4 or more per capita of school population for each school district of the state, and an increase of over 25 per cent in the total amount of school fund money each district would receive," says Thomas E. Johnson, state superintendent. "This year the per capita of the primary school fund received by each district was around $15. Under the proposed increase it would be raised to $19. Obviously that would very materially reduce the school tax levy on general property in every city and every other school district in Michigan to the relief of the taxpayer.

"In cities like Detroit and Lansing, with a school tax on property of some $6 and $10 a thousand respectively, this increase in school fund money would greatly reduce that local levy. And in outdistricts, where there are numerous instances of a school tax of from $20 to $35 a thousand, and which in the most limited districts has been known to reach $80 a thousand, this added school fund money will mean a good part of the salvation of the taxpayer."

—At the testimonial dinner given in honor of President George J. Ryan of the New York City board of education, Mayor John F. Hylan held that the "pay-as-you-go-plan" would have prevented the proper financing of the schools. His administration had expended $160,000,000 for a school program which was $37,000,000 more than had been expended in the previous twenty years.

—The village of Valders, Wisconsin, is proud of the fact that it spends more for education than any community in Manitowoc County. Sixty-five cents of every dollar collected goes for school purposes in that village, while in the town of Franklin only nineteen cents is spent for that cause. The city of Manitowoc spends 33 cents of each dollar on education and Two Rivers, 42. The villages of Reedsville and Kiel allow 30 and 38 cents, respectively, for learning.

—The budget for 1925-26 recommended by Superintendent D. E. Hickey, and adopted by the board of education of South St. Paul, Minn., calls for $266,725. Of that sum, $163,500 goes for teachers' salaries and supervision. The state aid amounts to $25,000.

—Superintendent S. H. Thompson of Whittier, California, has compiled the tax distribution for his city and county. He demonstrates that the rate is $2.35 in the district while the Whittier city rate is $1.17 on each $100. He points out that the school taxes in several counties of the state range from $0.95 to $1.80.

—Chicago, Ill. A readjustment of the class membership of elementary schools to 48 pupils, with a decrease of 700 teachers and an annual saving of $1,000,000 has been recommended by Mr. N. B. Henry, secretary of the finance committee of the board of education. Differences in class membership, averages of various schools and districts, are pointed out in statistical tables appended to the report.

The suggestion is made that, in view of the favorable showing of large classes, the shortage of classroom space, and the deficit in the educational fund, an emergency may be said to exist that requires at least a trial of the plan of more uniform assignment of large classes. The number of teachers to be discharged under the plan is approximately 1,000, which will largely include those above the age of 59. There seems to be little probability that the report will be accepted.

—Curtailed state aid for the public school assessed in Fearing and Decatur townships, Ohio, as a result of the defeat of the school levy at the recent fall election. Following the defeat of the measure, the people in the two districts circulated petitions for a levy, secured the required signatures, and presented them to the state department.

——Curtailed state aid for the public school system of Missouri and a tightening up on many activities of state government is facing the incoming state administration as a result of the condition of the finances following a reduction of the tax rate two years ago. The public schools will suffer directly from the shortage in the proportion that the revenue is less than it was in the last two years. Last year the schools received nearly $4,000,000 from the state but it is doubtful whether the amount will reach $3,500,000 this year.

—Chicago, Ill. Declaring that the financial condition of the schools has made it imperative to reduce the 1925 budget, Supt. William McAndrew has recommended that a ten per cent reduction be made in the per capita rate of each pupil for educational supplies. Approximately $1,000,000 was appropriated for that purpose in 1924. The ten per cent reduction, it is estimated, would largely eliminate the $3,000,000 deficit which has piled up in the last few years.

—Homewood, Ill. A group of 200 citizens voluntarily appeared before the board of review and agreed to equalization and increases in taxes to double the revenue for school purposes. The action of these citizens was effective in preventing the closing of the schools. It is planned to begin a reassessment of property to increase the taxes and to provide sufficient revenue for the schools.

—The state of Ohio will require some legislation to relieve the school finance situation. Strenuous efforts had to be made in instances to keep the schools open. Reports also are made to the effect that in some districts the teachers had received no salary since last September. Vernon M. Riegel, the state superintendent has appointed a committee to advise on the subject of legislative relief.

—The voters of six school districts in Ross County, Ohio, approved a three mill levy for school purposes at the election held on November 4th. The approval of the levy means that the schools will be operated under normal conditions for another period of five years.

—The law passed by the last legislature of Illinois, under which the school distributive fund is divided among the districts on the basis of the number of pupils and ranking of teachers, was passed upon by the State Supreme Court at the December term. The attorney general recently held that the law is invalid because it is vague and impossible of enforcement.

—President C. M. Moderwell of the Chicago board of education has announced he will seek the advice of leading financiers of the city as to the means for meeting a school deficit. In the meantime, the attention of heads of departments and executives will be centered on reducing expenses wherever possible. Unless extraordinary retrenchments are made, the board's deficit will be increased by $2,000,000 during the next year. Of this $1,700,000 is needed to pay the automatic increases in salaries of teachers, and the remainder will be needed to take care of increases in enrollment.

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SCHOOL BUILDING NEWS

—The new auditorium of the Cochran Junior High School, at Johnstown, Pa., was recently completed. The auditorium which is considered one of the finest in the country, has beautiful, ornamented, plastered organ loft grilles, proscenium arch and ceiling and seats 1,948 persons. The building has been designed as a community center feature and is equipped for all kinds of theatricals.

In connection with the opening of the new auditorium, the school board put on an artists' course of seven musical numbers. The series began October 29th, with "The Marriage of Figaro" and closes April 16th with a duo-art recital. The first number which was grand opera, was presented to a house of about 1,400 and won the enthusiastic approval of those who heard it.

—Norwalk, Conn. The Center junior high school and Roger Ludlow junior high school have been completed and will be occupied during the second semester. The Broad River grade school has also been completed and will be used for the first time this semester. An addition to the Washington school was occupied in December.

Steps have been taken looking toward the submission of a bond issue for the erection of a third junior high school and for the purchase of four new school sites which will be needed in a few years. It is also planned to ask for a bond issue for a senior high school to be voted on two years hence.

—Canon City, Colo. The administrative department has made special efforts to provide adequate school facilities for all the school children. A four-room grade school has been completed, and a new senior high school to cost $220,000 is now in course of erection. The school program provides for two junior high schools and one senior high school. The schools will be reorganized on the six-three-three plan next year.

—South Bend, Ind. The Southeast Junior High School, now under construction, will be completed ready for occupancy with the opening of the second semester. In addition to 36 regular classrooms, it contains a gymnasium with a seating capacity of 300 persons, and an auditorium seating 750 people. It will be completed at a cost of $550,000.

—Enfield, Conn. A high school to accommodate 500 pupils is in course of erection at the present time. The building is of brick, with artificial stone trim, and will cost $277,500 at completion. The building was designed by the Frank Irving Cooper Corporation and is being built by the Stephens Co., of Springfield, Mass.

—Cincinnati, O. The board of education has taken steps looking toward a survey of the building needs of the city covering the next 25 years. The purpose of the survey is to make possible the selection of suitable sites for the future and to meet the demand for buildings suited to the growing needs of the schools.

—Orlando, Florida, is proceeding with its building program formulated a year ago under the supervision of Mr. Fletcher B. Dresslar, school building expert of the Bureau of Education.

A $300,000 bond issue has been submitted to the people and it is expected that the following buildings will be erected: A junior high school to accommodate 600, an elementary school, and a school for colored pupils, together with additions to two other elementary schools.

It is pointed out that the enrollment since 1920 has increased from 2,000 to about 5,000. This has called for a continuous building program to meet the present needs of the schools.

—In Taylor County, Florida, the board of education has expended $25,000 on new buildings and equipment. The expense of conducting high schools has been considerably increased due to the establishment of a classical course, in addition to the previous scientific course.

—Fairfield, Conn. A new high school to accommodate 500 students, is in course of erection. The building is being erected at an estimated cost of $300,000 and will be ready for occupancy in March.

—Greeley, Colo., has erected a high school auditorium-gymnasium that will seat 1,600 people at a single basketball game, or 2,400 at an ordinary entertainment.

—Framingham, Mass. A fifteen-room elementary school of semi-fireproof construction, has been completed and will be occupied in January. Among the special features of the building are the wide corridor used for gymnasium purposes and the Univent system of heating.

—Redlands, Calif. Bonds in the amount of $350,000 have been voted for new elementary buildings. The board has employed Messrs. Allison & Allison as architects for the building and construction work starts January first.

(Continued on Page 110)

FLOORING

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Four danger spots in your school

FOUR parts of a school building require more than their share of attention. These four are the floors, roof, painted surfaces and exterior walls. On these trouble spots you can cut your present maintenance costs to a surprisingly low level. Hundreds of schools all over the country have done so by following the suggestions below.

Concrete floors — Under friction and wear tiny particles of a cement floor break off and float into the air as silicate dust. This dust is hard on lungs, clothes and equipment. Even more troublesome than the dust are the holes, hollows and worn patches that follow in its wake. Before long you have floor repairs to make.

Yet it is a simple matter to have concrete floors that are hard—that will not dust or wear. Just treat your concrete floor with Lapidolith, the liquid chemical hardener. Lapidolith can be flushed on either a new or old floor like water. It penetrates the concrete, fills and binds the loose pores together, hydrates the free lime, and changes the coarse-grained structure to a fine, even, dense wearing surface of crystalline formation. This surface remains dustproof, wearproof, and waterproof for years.

Wood floors — You can keep your wood floors in good condition by an application of Lignophol, a preservative floor dressing that penetrates the wood, restoring its natural oil and gums. It is worth many applications of ordinary floor oil. A floor treated with Lignophol is not sticky nor inflammable. It is dustless, smooth, hard and sanitary; easy to wash or to sweep. And it stays that way for many years.

Leaky roofs—One tiny leak in the roof can cause a lot of damage. An application of Stormtight will stop any one leak or make an entire roof absolutely waterproof.

Stormtight is a thick, adhesive rubber-like compound that can be applied by anyone, over any roofing material. If the leak is small, semi-liquid Stormtight is applied with a brush. If it is large, the plastic form of the material is used, applied with a trowel. If you have an old roof about due for renewal, save the cost of re-roofing and cover the surface with Stormtight.

Painted surfaces—For school interiors you want a paint that is durable, washable and stays white. Cemcoat is a gloss, eggshell or flat enamel paint that stays white long after all other paints turn yellow. Finger prints, ink stains and pencil marks can be washed off its surface as from tile, and after repeated washings the paint still looks like new.

Cemcoat is not affected by the free lime in plaster or cement. It adheres to those surfaces or to a brick wall just as easily as to wood. And because of its body, Cemcoat usually requires one less coat than other paints. If you want bright, cheery, long-lasting interiors at a low cost, try this paint. Made in white and colors, for exteriors as well as interiors.

Exterior walls—If you have trouble maintaining the natural beauty of your exterior walls; if water seeps through in a driving rainstorm, you will welcome Hydrocide Colorless, the ideal waterproofer.

Hydrocide Colorless penetrates the surface of the brick; it contains no paraffine; does not run in hot weather; does not collect dust; and it can be painted. Best of all, the presence of Hydrocide Colorless on a wall can not be detected. If you would have warm dry interiors use this material.

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(Continued from Page 108)

—Derby, Conn. Plans have been made for the building of an addition to the high school. The structure will consist of eleven rooms, an auditorium and gymnasium, and will cost $145,000.

—Roseville, Calif. The contract has been awarded for the erection of a new eight-room grade school to cost $50,000. The enrollment in the schools has grown from 776 in 1920 to 1,060 in 1924, while the number of teachers employed has grown from 21 to 31, with two special teachers, one for art and one for music and science.

—Suffield, Conn. The Center School, with auditorium of the one-story type, is under construction at the present time. The building was designed by W. B. Chambers, of New York City, and will be equipped throughout with movable desks and seats.

—East Granby, Conn. The school board has completed a building program involving the erection of two schools, the enlargement of one school, and the remodeling of each existing building. The entire school plant is now fully adapted to all the needs of the town.

—Brooksville, Fla. The town has outgrown its new school built in 1920. The board has been forced this year to rent rooms for three classes to take care of the overflow. A new lot has been purchased and plans made for the erection of a new and larger building on the new site.

—Indianapolis, Ind. Construction work will start immediately on the new west side school and the new colored high school according to a recent decision of the board. Architects have been selected to prepare the plans for these buildings and specifications will be ready in the near future. The erection of the Shortridge high school is to be somewhat delayed but construction work will be begun as soon as possible.

—Jefferson, Wis. Construction work has begun on the new high school which is to be the best of its size in the state.

—Chicago, Ill. The construction of fourteen elementary and sixteen junior high schools, costing $20,000,000 has been approved by the board of education. The schools will provide seats for approximately 50,000 pupils and will do away with most of the portable buildings now in use in congested sections. The new program provides for the purchase of sites for the buildings except where branch schools now in existence are to be replaced with new buildings. Plans are in process of completion and bids will be awarded at the rate of one building a week.

The buildings will all be of the unit type of construction and will be rushed to completion within a year's time. The cost of construction is taken from the school building fund so that there is no added expense to the taxpayer.

—Fort Scott, Kans. The school board faces the problem of lack of classroom space and of modern equipment and facilities. It is probable that a building program will be adopted to cover the present needs of the schools in the way of additional classrooms.

—Dayton, O. The first steps toward selling $300,000 worth of the bonds representing the first installment of the $4,000,000 bond issue approved at the recent election have been taken by the board. As soon as the bond issues have been sold, the work of fireproofing the present buildings will be begun. Additions to buildings, purchase of sites, and the erection of new buildings will follow as rapidly as possible.

—Marshall, Tex. The corner stone of the new high school was laid on November 14th, with elaborate ceremonies. Mr. William Caven and Mr. H. W. Pierpont were the speakers.

—New York, N. Y. Construction and equipment bids were grouped and awarded together for the first time on November 13th when the board awarded contracts for Public Schools Nos. 68 and 70, Borough of Bronx. The action was taken to establish definite responsibility for the erection of new schools in order that contractors may not plead that delays are caused by the letting of equipment contracts subsequent to construction contracts. In the past, this has been one of the principal causes of delay in the completion of buildings. In the aggregate, the contracts on both schools exceeded the estimated cost by about $60,000 each.

—Shillington, Pa. An up-to-date high school has been assured as a result of the approval of bonds at the November election. A site has been purchased for the new building.

—Cincinnati, O. The $8,500,000 bond issue was approved at the November election with a decisive majority. As a result, the board is proceeding with the erection and remodeling of the school buildings to meet rapidly growing needs in various sections. The board has an unexpended portion of the $5,000,000 issue of five years ago, and will use both this sum and the new issue in completing the remainder of its program.

—At Spencerville, O., a three-mill levy carried four to one. The levy will run for five years.

—College Corner, O. A $60,000 bond issue has been carried for a new school. The school is on the state line, and a similar amount has already been provided by the people on the Indiana side.

—Philadelphia, Pa. At the November election the voters approved an appropriation of $1,000,000 for a new site for the administration building of the board of education. The machinery for obtaining the site is to be provided in an ordinance to be presented to the city council.

—Reading, Pa. The school board has adopted a three to four-year building program to bring all the grade buildings up to the standard. The program provides for the erection of seventeen new grade buildings, at an estimated expenditure of $3,500,000.

—Lafayette, La. The school board has called an election to vote on $750,000 in bonds for additional school buildings in different parts of the parish.

—Denver, Colo. The school tax levy for 1925 is slightly under twelve mills on each dollar of assessed valuation. The levy for next year will be slightly in excess of that for the current year. This year's levy was 11.64 mills. The budget for this year aggregated $4,893,895.

—Minneapolis, Minn. The school board has begun work on a building program for 1925, giving particular attention to the needs of schools in South Minneapolis.

—Greensburg, Pa. A school bond issue of $600,000 was approved by a large majority at the November election. The money will be used for the completion of the new high school.

—Bellingham, Wash. The school board has taken steps toward outlining a building program for submission to the voters. The program will

(Continued on Page 113)

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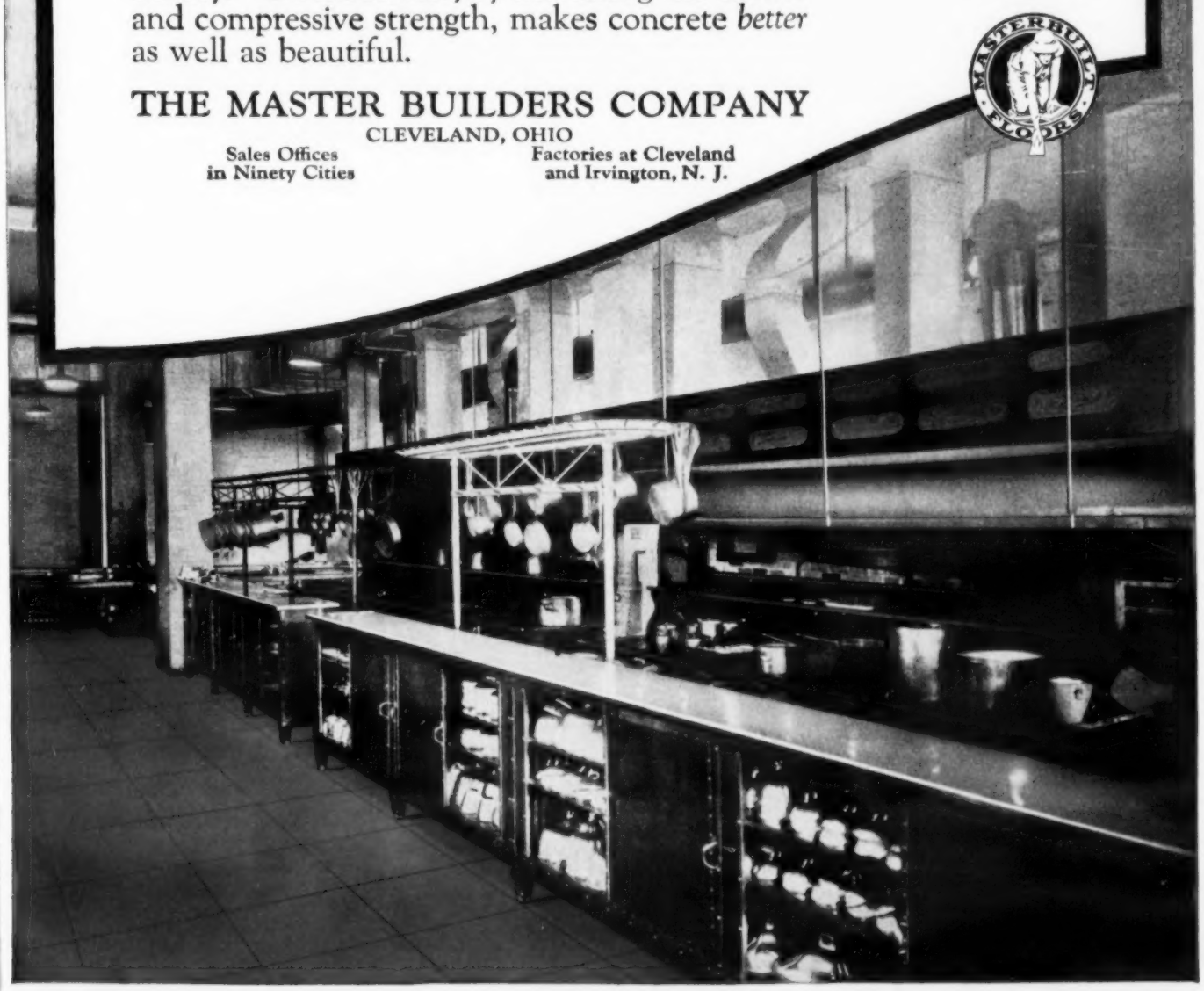

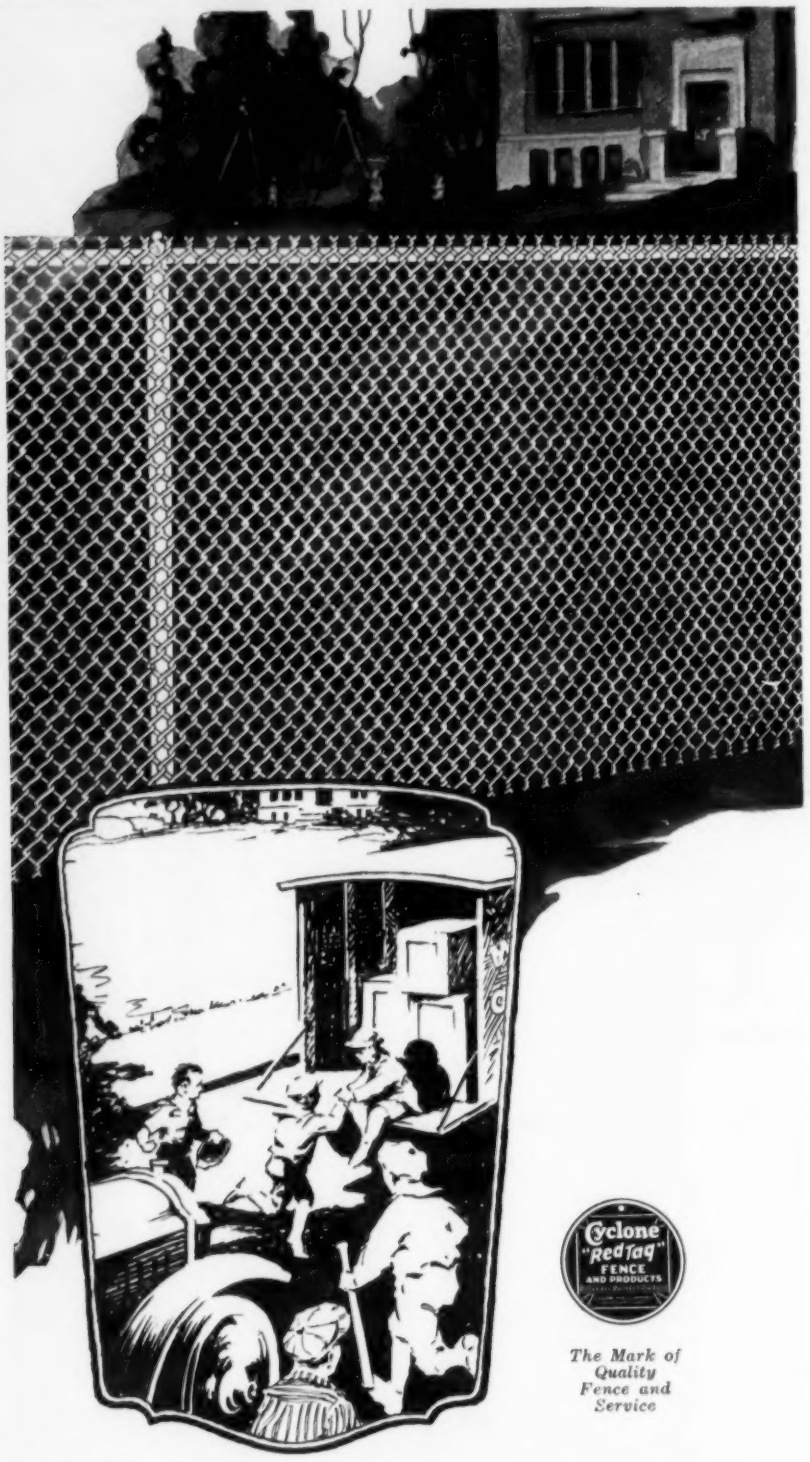

Cyclone "Red Tag" FENCE AND PRODUCTS

The Mark of Quality Fence and Service

"——the child dashed from the grounds, and before I could stop the car——"
This is the explanation of countless traffic accidents at school and playgrounds. Many of these accidents could easily be avoided by installing Cyclone Fence.
Cyclone Fence prevents children from dashing into busy streets. Centralizes grounds, facilitates control. Cyclone "Galv-After" Chain Link Fence is Heavily Zinc-Coated (or Hot-Galvanized) by Hot-Dipping Process AFTER Weaving. No painting.
We also manufacture Iron Fence in suitable styles for schools and playgrounds.

Write nearest offices for complete information.

CYCLONE FENCE COMPANY

Factories and Offices:
Waukegan, Ill. Cleveland, Ohio Newark, N. J. Fort Worth, Tex.
Western Distributors:
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Cyclone Fence

"GALV-AFTER" CHAIN LINK FABRIC

PROPERTY PROTECTION PAYS

DOW LOUISVILLE

spiral slide
FIRESCAPE

The roar of flames, then the roar of the press! Will the name of your school ever find a place in headlines like this? HUNDREDS OF CHILDREN TRAPPED IN FIRE! Not if you prepare today. Let Dow Spiral Slide Firescapes protect the lives of children in your care. Write for further information.

THE DOW CO.
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Use the Norton Liquid Door Closer with Hold-Open Arms and do away with door stop on bottom of door.

WHY Is The NORTON Closer With Hold-Open Arms the Best Suited for Schoolhouse Work?

1st. The doors are closed with a uniform speed, which gives the pupils a chance to go through a door without getting caught or injured.

2nd. Having two speeds, the speed at the latch can be set for absolute quiet—no latch necessary.

3rd. The Hold-Open Device connected with the arm of the Door Closer is automatic, a child can operate it—just a push or pull on the door is all there is to do it. Does away with door stop, hook or strap to hold the door open.

Every school-room should have one.

Service:—We have expert service-men on call, free of charge.
Price:—The price is right.
Send for a representative.

THE NORTON DOOR CLOSER CO.
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The Preferred Light for Schools
Thousands of classrooms in grade schools, high schools and colleges are now lighted with DENZARS. The unique features of this lighting unit, the quality of its perfectly diffused light, and the saving in current consumption that frequently results from its use all combine to make it extremely popular with school authorities. Our circular "More Light for Less Money" will interest you. May we send you a copy?
BEARDSLEE CHANDELIER MFG. CO,
219 South Jefferson St.,
Chicago, Illinois
DENZAR

(Continued from Page 110)

provide for two junior high schools and for an addition to the Larrabee building.

—Fort Morgan, Colo. On October 24th, a bond issue of $290,000 was carried for a new high school building. The building will be a three-story, fireproof structure, containing all modern facilities. W. M. Bowman, Denver, is the architect.

—The Pierce Junior High School at North Attleboro, Mass., was destroyed by f e on November 28th. The building was built in 1899 and housed 300 pupils.

—The corner stone of the Morgan Gardner Bulkeley High School at Hartford, Conn., was laid on November 21st, with appropriate ceremonies. The building will cost $1,800,000 and will be the second large high school in Hartford to be erected by the Frank Irving Cooper Corporation of Boston.

—The school board of Enfield, Conn., recently received bids for furniture for the new high school. The architects are the Frank Irving Cooper Corporation, Boston, Mass.

—At Euclid, O., four additions and one new building will be erected. A bond issue of $500,000 has been voted for the purpose.

—An addition will be built for the Bee Hive District School, in Cuyahoga County, O. A bond issue of $250,000 has been provided.

—A new grade school will be erected for Fairview Village, Cuyahoga County, O., to cost about $175,000.

—Quincy, Fla. Two new schools have recently been completed in Gadsden County. A combination grammar-and-high school has been occupied at Chattahoocher. It contains five classrooms and an auditorium, and cost about $27,000. At Greensboro, a splendid building containing ten classrooms and an auditorium, has been completed at a cost of $20,000. A number of additional buildings are planned for next year.

—Pawtucket, R. I. The school board has completed plans for the erection of a senior high school, to cost approximately $750,000. The building which will be of brick, concrete, and steel, will take care of 1,200 pupils, and will be especially designed for the comfort, health and study needs of the student body.

—The new grade school No. 6, at Indianapolis, Ind., was dedicated on November 14th. President C. R. Yoke of the board, spoke at the dedication exercises. Other speakers were Supt. E. U. Graff and Edwin Emrich.

—The Chicago board of education has joined hands with the Chicago teachers' federation in securing greater equity in the administration of taxation laws. Edgar N. Greenebaum, vice-president of the board, estimates that property values in Chicago have increased $500,000,000 since 1921 and only $80,000,000 have been added to the tax rolls.

—When the new $85,000 school just completed at Richardson Park, Delaware, was first planned a year ago, it was estimated that the rate of taxation would be at least 47 cents on each $100 assessment. The location of the new schoolhouse has prompted so many new homes within its environment thus increasing the volume of taxable property, that it has thereby reduced the rate to 27 cents.

—Omaha, Neb. The citizens have asked that the school board give first consideration to the needs of the grade schools in its expenditure of the $2,500,000 bond issue recently approved. It is probable that the new board members will be consulted before the expenditures for schools are prepared.

—Seattle, Wash. The cost of educating children in the schools has steadily decreased but the housing facilities remain poor. The cost of high school education has been reduced from $149 to $120, and the cost of grade school education from $101 to $85. Of the total enrollment, 4,834 students, or one in every eleven, are housed in temporary or portable classrooms. The school board has taken up the matter of a building program to meet immediate needs in classroom accommodations.

—Rockford, Ill. The school board has taken steps toward the erection of a community athletic stadium on the site of Kishwaukee park. Work on the construction of the stadium will begin next spring.

—Sioux City, Ia. The school board has sold $300,000 worth of four-and-one-quarter per cent serial bonds for the construction of the Central junior high school.

—The Chicago board of education is entertaining a two-year school building program, to involve an expenditure of $170,000,000.

—The board of education of Corsicana, Texas, has completed a schoolhouse program involving an expenditure of $636,000. William B. Ittner designed several of the buildings. The board consists of W. P. McCammon, president; C. A. Middleton, secretary; Mrs. J. E. Butler, Mrs. T. A. Miller, Sam J. Jackson, W. Neil Johnson, C. G. Davidson and H. D. Fillers, superintendent of schools.

—The Chicago board of education is laboring with a deficit of $3,000,000. President Moderwell does not favor a bond issue to meet current expenses. "I do not favor a bond issue, however," he said. "That is too much like asking future generations to pay for the education of their grandparents. I hope we can find some other way to solve our problem." "There are a lot of leaks to be stopped," was the comment of Julius F. Smietanka, chairman of the finance committee.

—Three solutions to the problem of financing the schools during January and February are open to Lima, Ohio, according to a statement made by Dr. R. A. Buchanan, president, board of education. The first is to borrow from the state, the second from the banks, and the third to resort to a special tax levy. The board will secure the consent of the state auditor to borrow locally.

—The board of directors of the Virginia state teachers' association is making a study of the school finances of the several units of the state. The board finds that more than seventy-five counties are heavily in debt. The indebtedness runs from a few thousand to several hundred thousand aggregating something like one million dollars. The resolution adopted urges the county school boards to relieve themselves of their floating obligations and suggests that for the future the local school authorities do not attempt to run the schools for a period longer than the actual funds in hand will permit. In May, 1925, a state-wide intensive campaign will be undertaken, if the recommendation is adopted, whereby appeals will be made in every city and county in Virginia for a larger financial support and better scholastic advantages for all the children of the state, efficiency and

DAHLSTROM

DAHLSTROM FIRE EXIT DOORS in the ANDREWS SCHOOL Pittsburgh, Pa.

An annual fire loss of about $500,000,000.00 points to the necessity for greater enlightenment on the subject of fire-hazards.

Dahlstrom Steel Doors and Trim installed in school buildings will not only furnish protection to the pupils but will also serve to teach them the best means of combating the fire waste.

Write us for full information on this important subject.

DAHLSTROM METALLIC DOOR COMPANY
415 Buffalo Street. Jamestown, New York.

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Local Representatives in Principal Cities.

economy in the state government, equalization of the tax laws and assessments, more money for a more rapid completion of the roads of the state, approval of the five-five program of the state chamber of commerce and adequate funds for the physical equipment of the several state colleges and the university.

—Indianapolis, Ind. Heads of departments in the schools have been asked to cooperate with the business department in keeping down expenditures during the present year. A program of drastic economy has been outlined to avoid a deficit in school funds.

—"Save $2,000,000 on better schools" is the title of a pamphlet issued by the Cuyahoga County, Ohio, board of education, which represents the county outside of the city of Cleveland. The claim is based on a building program that reaches to 1940. It demonstrates that a timely anticipation of future based upon a rational growth of the school population constitutes a big item of economy. The pamphlet was prepared by Superintendent A. G. Yawberg and Assistant Superintendent Joseph A. Baer. The members of the board of education are: President, S. W. Jennings, Olmsted Falls; Vice-president F. H. Vogel, Brooklyn Station, Cleveland; L. R. Dewey, Solon; J. E. Rowland and E. J. Thorn, South Euclid.

—Port Clinton, O. A three-mill school levy was renewed this fall by a six-to-one vote.

—Hillsboro, O. Teachers in school districts of Highland County have been assured that their salaries will be paid if they return to their positions. Schools in Clay, New Market and Concord townships were forced to close because of a lack of funds for operating expenses.

One school board in the county was notified that if teachers were not given contracts covering an eight-month period, the county board would be compelled to perform such act.

—The board of education of Peoria, Ill., recently made a study of its light bills. It was asserted that some of the teachers were in the habit of pulling down the window shades and turning on the electric lights.

—Mr. Ernest Sibley, of Palisade, N. J., has been selected as consulting architect for the new John Harris high school to be erected at Harrisburg, Pa. Mr. Sibley was appointed upon the recommendation of Supt. C. H. Garwood, and will receive $100 a day and expenses for actual time devoted to consultation work.

The actual work on the plans for the building is being done by the regular architects, Henry H. Hornbostel and Clayton J. Lappley, Dr. N. L. Engelhardt, and Supt. C. H. Garwood.

—Burlington, Ia. The school board has invited bids for the construction of bleachers in connection with the improvement of the stadium. The stadium provides for a running track, a football field, and baseball diamond, and will be ready for use in the spring.

—Lincoln, Neb. The school board has adopted a policy of competitive bidding and special budgets for individual buildings to be erected under the $3,000,000 bond issue recently voted.

—Madison, Wis. A school bond issue of $541,000 for 1925, recommended by the school board, has been presented to the city council for approval. Of the total amount, $276,000 will be used for additions to several schools. The bond issue will be apportioned to the following purposes:

1. Sites for a West Side high school, a West Side elementary, and a South Side junior high school—$155,000.
2. For the completion of the East Side high school auditorium and gymnasium—$191,000.
3. For the completion of the Emerson, Longfellow, and Randall additions—$85,000.
4. For the purchase of the remainder of the block on which the Longfellow school stands—$60,000.
5. For preliminary work to be done in 1925 for the purpose of relieving congestion at the Lowell and Hawthorne schools—$50,000.

—The opening of the new Cochran Junior high school at Johnstown, Pa., was attended with elaborate ceremonies. Dr. J. George Becht, state superintendent, Dr. A. E. Winship, and Dr. John M. Thomas, president, Pennsylvania State College were the principal speakers. At the afternoon program Principal Dale McMaster presided. The evening program was headed by President J. D. Rutledge of the board of education.

—At the dedication of the new $70,000 high school building erected at Barnsdall, Osage County, Okla., State Superintendent M. A. Nash was the principal speaker. President E. B. Gray of the board of education formally presented the building to the public.

Well-Known Architect Dies

Mr. Eugene H. Taylor, 71, a veteran architect of Cedar Rapids, Ia., died at St. Luke's Hospital, Cedar Rapids, from injuries received in an automobile accident.

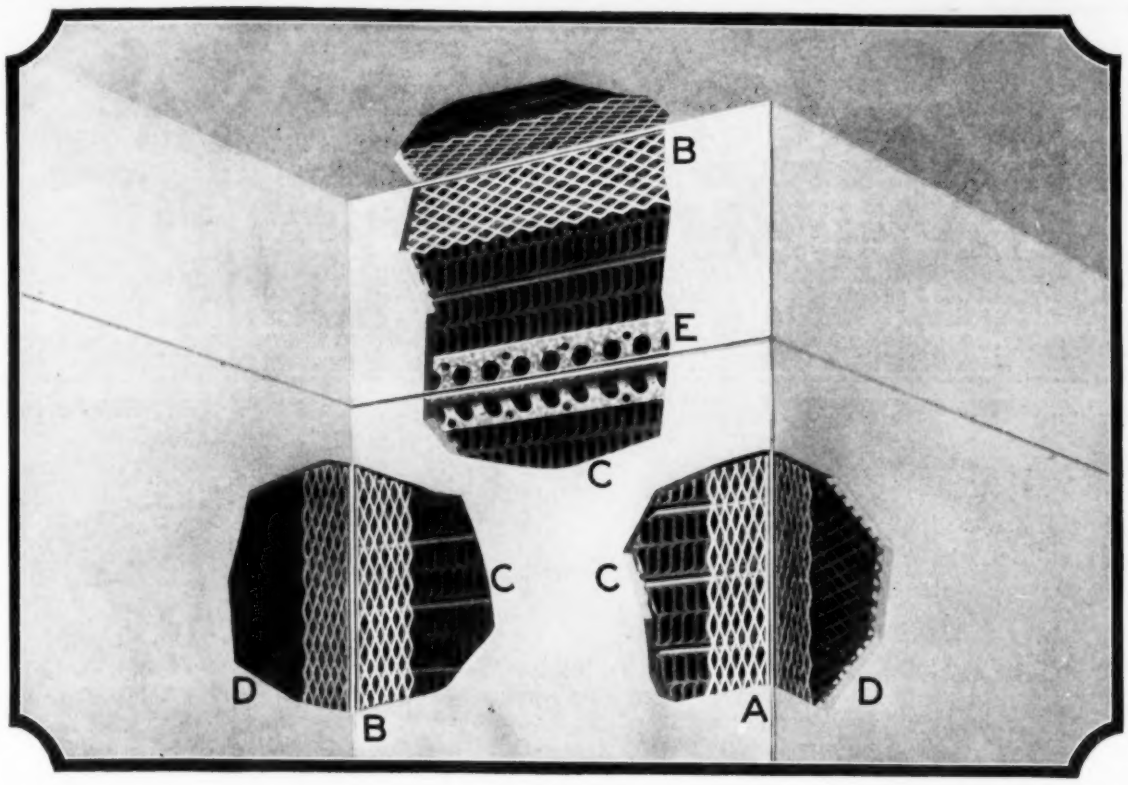
Mr. Taylor was prominent in architectural circles in Iowa and through the northwest. He was a charter member of the Iowa chapter of the American Institute of Architects. He was a graduate of Grinnell College, and of the Boston Institute of Technology. While attending the Massachusetts Institute, he met H. S. Josselyn, and in 1882 a partnership was formed. For the first four years the office was in Des Moines, but in 1886 Mr. Taylor joined his partner at Cedar Rapids, where he had resided ever since. The firm had designed many well-known buildings in Cedar Rapids and throughout Iowa.

TO STUDY BUILDING CARE

—The Massachusetts State Department of Education, with the cooperation of a special committee of seven, has begun a study of the care of school buildings and grounds. The study covers the important matters relating to the care and upkeep of school property, and will probably be extended to include cities in New England and in New York and New Jersey.

The idea of a study of school building plants originated with Dr. Payson Smith, commissioner of education for Massachusetts, and resulted in the appointment of a special committee which should represent the state education department, the state department of health, the city school system, the large town school systems, and the small town union school districts.

Following the organization of the committee in November, 1924, the chairman appointed a sub-committee consisting of Supt. F. A. Scott, Belmont; Dr. Frederika Moore, Boston; and Supt. W. C. McGinnis, Revere, to study and report on the details of the investigation. It is expected that the work will be pushed with vigor and that a report of the committee's findings will be presented at the next annual conference of Massachusetts Superintendents in May, 1925.



Such Walls as These are SAFE!

ORDINARY plastered walls and ceilings in school rooms are dangerous They are dangerous *anywhere*, but particularly in schools because if any part of a ceiling falls off in a school room, some child is almost certain to be hit and injured.

This hazard does not exist where walls and ceilings are plastered over Milcor Metal Lath. There never has been a ceiling tragedy where metal lath has been used. Walls constructed with Milcor Products are not only crackproof but are firesafe, sanitary, and permanent—capable of withstanding more abuse than any other type of plastered construction can endure.

Even over wood-studs, ordinarily not considered as firesafe construction, Milcor Metal Lathed Walls have been given a full One-hour Rating by the Underwriters' Laboratories, whose investigations proved sufficient fire-retardative qualities of plaster on metal lath to prevent spread of fire for at least one hour from the room in which it starts.

With Milcor "Expansion" Metal Casings, "Expansion" Corner Beads and other Milcor Products in metal, maximum permanence at reasonable cost is made possible for school buidings.

School Board Members, School Architects and Contractors who haven't complete data in their files regarding Milcor Firesafe Products should write for the two free books described below.

Two Data Books You Need—FREE!

The Milcor Manual, a valuable 80-page book on Firesafe Construction — including Metal Lath, Corner Bead, Casings, Steel Domes, etc., with important tabular information on safe floor spans.

The Milcor Guide, a 5-color, 64-page Book, featuring Milcor Art Metal Roofing, Ventilators, Skylights, Metal Ceilings, Metal Chalk Trays, Chair Rails, etc., with erection instructions.

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Products *for* Schools and Colleges

MILCOR School Building Products

Stay-Rib Metal Lath ("C" in illustration)
Netmesh Metal Lath ("D" in illustration)
Expansion Corner Bead ("A" and "B" in illustration)
Concealed Picture Molding ("E" in illustration)
Expansion Casings (for Doors and Windows)
Metal Window Stools
Metal Wall Bases
Metal Chalk Rails
Titelock Metal Roofing, Eaves Trough, Conductor Pipe, Cornices
Ventilators and Skylights
Invisible Joint Metal Ceilings
Steel Domes for reinforced concrete floors
Porto All-Steel Buildings
and other sheet steel building specialties

To Manual Training Teachers

Copies of the two Milcor Books described here will be sent gladly to any pupils in Manual Training Classes if requests are directed to us through the teachers of such interested pupils. Write for these books, show them to your Class and then get as many extra copies as you need.

Milcor Spanish Metal Tile

One of the popular art metal roofings in the Milcor Line. Weighs only a fraction as much as clay tile. Firesafe, economical, stylish.

Milcor Ventilators

A complete line of various types of Milcor Ventilators, Skylights, etc., ideal for schools and other public buildings. Full information included in "The Milcor Guide".

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Milwaukee, Wisconsin

Gentlemen:—
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Over One Million Brascolites In Use

Glareless Light Saves Sight

Your methods of instruction may be ideal. School sanitation and ventilation perfect; but if the present lighting equipment causes nervous eye-strain and worry, the rest of your efforts are wasted.

Brascolites, in use all over the world, are built on the scientific principle of *diffusion plus reflection.* Wherever installed, they furnish an abundance of soft, mellow, glareless white light which extends to every corner of the room. Since it is your life work to send into the world only the highest type of students—physically as well as mentally—you owe it to your own efforts to investigate Brascolite.

Our catalogs will inform you more thoroughly. Will you write for them? No obligation whatever.

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DESIGNERS - ENGINEERS - MANUFACTURERS

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EDUCATIONAL INEQUALITIES

The National Education Association has brought out the following figures to show the inequalities in school support now prevailing in this country:

The five richest states had an average annual income in 1919 of $3,356 per child; the five poorest states only $960.

The five richest states spent $50.37 in 1920 for the education of each child; the five poorest only $10.76.

The average yearly income of the United States is $65,000,000,000; expenditures in 1922 for public elementary and secondary education were $1,580,671,296.

A person without education has one chance in 161,290 of achieving distinction; a person with a high-school education has one chance in 1,606.

Among country children 49 per cent have defective teeth; among city children 33.58 per cent.

During 1923 city teachers received an average salary of $1,653, village and town teachers $1,141, teachers in one-room rural schools $729.

The annual income of each person gainfully employed is $1,789.16 in the five states ranking highest in school efficiency; $999.07 in the five states ranking lowest.

The average savings account of each person gainfully employed is $695.50 in the five states ranking highest in school efficiency; $89.25 in the five states ranking lowest.

THE SCHOOLS AS BIG BUSINESS

"Why have our schools failed to keep pace with big business development?" is the question which Clarence E. Howell, assistant superintendent of the New Bedford, Mass., schools discussed at a public gathering recently. His answer was:

"If big business methods are to govern, our American schools must cease to be the football of politics. You, as the stockholders, must appreciate this. Just as the threat of politics makes us hesitate about government ownership of railroads and public utilities, so it is today endangering the efficiency of our schools.

"Perhaps the greatest hindrance to educational development lies in the fact that too many of our stockholders and members of school committees think they know more about the details of school administration than do those who have been especially trained for that business. It is this well-meaning, but mistaken, meddlesome, tendency that you can help to correct. It is easy to see that such interference upon the part of stockholders in a big corporation would soon wreck the business, in fact, no able man would accept the superintendency under these conditions. But we have not, to date, been able to apply other principles to our schools to any marked degree.

"Because the public at large is still laboring under an idea of school administration which has long since served its purpose and should now be cast aside. It is a far cry from the days of the colonists and the itinerant private tutor, to compulsory education for all and the employment of professionally trained teachers. And with this development of educational legislation and teaching technique there has come a corresponding change in the needed methods for supervising the schools. No longer does each member of the school committee know every child in town; indeed, I doubt if they even know every teacher. Neither is it a physical possibility for the superintendent to greet individually the thousands of children or to know all subjects better than do the teachers thereof. Instead of serving a long apprenticeship and reaching the superintendency only after attaining gray hair, he goes to a professional college and trains directly for the job in hand. Authority and responsibility must now be delegated to subordinates. The schools are truly a big business and the personal touch can no longer be maintained between their executives and the individual pupils."

PHILADELPHIA SCHOOL COSTS

Superintendent Edwin C. Broome, of Philadelphia, in discussing the school costs of that city, says:

"Our expenditure for all departments together is low, the expenditure being lower in only two of the nineteen cities—Louisville and Baltimore.

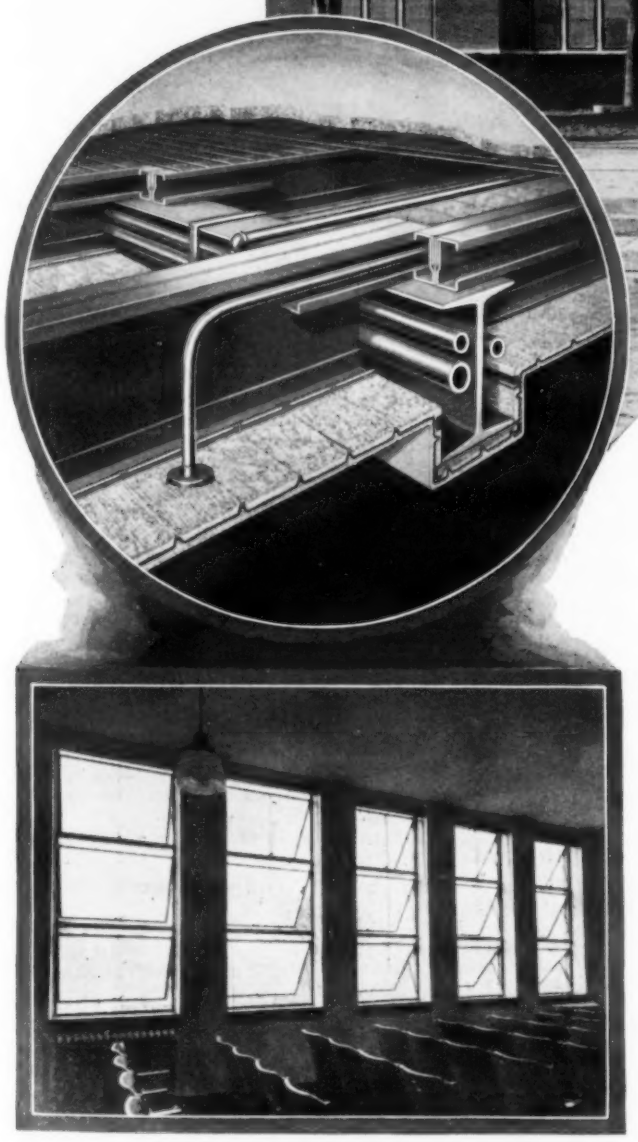
"At this point this question, however, suggests itself: Even if Philadelphia's public school costs are relatively low, is Philadelphia not spending all the city should pay? Ability to pay, certainly is a reasonable guide in determining the proper proportion of municipal expenditures to be devoted to schools. Again resorting to a comparative study for an answer we find that such a study was made in February, 1924, of the twelve largest cities, by the Federal Department of Commerce. The data is for 1923—the latest available data. It shows that the city which spent the highest proportion of city expenditures for maintenance of schools was Cleveland—42 per cent. The lowest was San Francisco—25 per cent. San Francisco was the only city of the twelve which devoted less than thirty per cent of its total expenditures for schools, except Philadelphia, which spent 29 per cent for schools. So much for the relative cost of maintenance and operation. How about the proportion spent for permanent improvements? The same report shows that, of the twelve cities, Los Angeles spent the highest proportion on permanent improvements for schools—49 percent of the total city expenditure for permanent improvements. Chicago spent the lowest proportion for schools—thirteen per cent; and Philadelphia schools received the next lowest proportion of city money for permanent improvements—sixteen per cent. Judging from the relative amounts expended for schools and other city departments, Philadelphia's school bill is certainly not in excess of ability to pay.

RULES AND REGULATIONS

—For some years the teachers' conferences held in the Chicago schools were called during school hours, necessitating the dismissal of classes. With the advent of the new superintendent, William McAndrew, the position was taken that the pupils were entitled to 196 school days in the year and that teachers' conferences designed to promote professional efficiency must not encroach upon the pupils' time. The board of education, in response to this idea, passed a resolution that principals shall call teachers' conferences whenever deemed necessary after school hours and that it shall become the duty of teachers to attend.

—The board of supervisors of Door County, Wis., have placed a ban on married women teachers. After September 1, 1925, no married women teachers will be allowed to teach in the rural schools unless exceptional conditions make it necessary.

Garnett High School, Garnett, Kansas.
Truscon Steel Joist as shown in Sectional View used throughout.



Truscon Steel Windows for schools include the Projected (shown above), Counterbalanced and Donovan Awning Types. They answer perfectly every demand of fireproofness, proper ventilation and daylighting.

Truscon Steel Joist Used in Following Schools

Junior High School, Meridian, Miss. Van Buren Grade School, Van Buren, Maine. St. Ann's Parish, Cleveland, Ohio. James H. Smart School, Fort Wayne, Ind. Zimmerman Elementary School, Flint, Mich. Wayne County Training School, Farmington, Mich. Emerson School, Madison, Wis. E. Carolina Teachers College, Greenville, N. C. Union District School, West Haven, Conn.

Safety for Schools

In the planning of educational structures the safety, convenience and health of prospective pupils are the most considerable items. Of these, safety has become the preeminent public concern. Fireproofness and insurance against collapse are absolute requirements of the modern school.

Through the use of Truscon Steel Joist the fire danger is eliminated as completely as science can reduce the hazards. Truscon Steel Joist effects economies through durability, speed of construction, decreased insurance, and a lightness of weight throughout the structure correspondent with its own.

The construction cost of schools erected with Truscon Steel Joist is no greater than for first quality wood construction and the desirable feature of soundproofness attendant upon a non-vibrating structure is secured. The use of Metal Lath with Steel Joist insures the cleanliness and beauty of walls that will not crack.

School architects and members of school boards will be particularly interested in special information on Truscon Steel Joists, sent free upon request.

TRUSCON STEEL COMPANY, YOUNGSTOWN, OHIO

Warehouses and Sales Offices from Pacific to Atlantic.
For addresses see phone books of principal cities.
Canada: Walkerville, Ont. Foreign Div.: New York.

TRUSCON
STEEL JOISTS

National Education Association Convention at Cincinnati, Feb. 22nd to 26th. We will look for you.

Are You Going to Cincinnati?

A Superintendent's Wife.

Of course you are going, and, although you have not yet scanned the full program, you know that you are going to have one good time.

First, it is a pleasant and welcome break in the routine of work during the dreariest season of the year. Then there is the train trip, where you meet and greet, and have a jolly reunion. You are literally boys (and girls) let out of school.

After the first hilarity is over you settle down in groups of three, or four, or even eight spilling all over one compartment; and, over your cigars. Yes, I know you do it over your cigars; you talk and smoke anywhere and everywhere in that train. Many a time have I sat in the next section listening to your interesting conversation until not only my soul but my eyes "burned within me" as the result of your efforts to smoke a knotty problem out of its hole. Never mind. The smarting eyes are more than repaid by the privilege of listening in.

Watching these small-group discussions from afar—in the train, the hotel lobby, at the dinner table—I always feel that at least one-half the good results of the gathering come about in this way. Here the men who are doing and supervising the work that directly affects the child, take up their real problems and exchange ideas hot from the bat.

And after that Cincinnati.

Not every number on that lengthy and complicated program will be interesting—which is no news to you. But by careful selection one can enjoy much, and escape much. Then, too, there is something to be learned from even the driest and dullest speech delivered. Impossible? No, indeed. When you are sitting so near the front that you simply cannot slip out while a very dull paper is being read in a very dull way, you have a splendid opportunity to learn how it feels when you require your staff to sit through a long teachers' meeting for which you have not provided adequate material (to put it kindly).

You know how interesting the personnel of that large group is. There is the great body of men and women who have come, often at quite some sacrifice, to get all they can of suggestion and inspiration for themselves and for those at home. In this group one sees men and women whose names stand for all that is best in education. Their reputations have been made, their positions assured. Yet they listen eagerly and attentively for any new ideas, or any new application of an old one. They are punctual, modest, and courteous to even the dullest paper. Some of the youngsters in this group have their reputations to make, but their keen faces show that they will be heard from in the future.

It is not difficult to pick out those who came because it is the custom, the proper thing to do; nor those few who came because their trustees urged it. Then, of course, there is the small group who came simply because it is a pleasant trip, and one can have a good time with "the boys" without anyone to keep tab when one plays hookey.

If one of these latter beings sits near you and annoys everyone who is trying to hear, or be heard, by noisily turning the newspaper he is reading, by talking in an undertone, or by some other of the many varieties of noises he can make, *please*, in the interests of the common good, reach over and throttle him as quietly and as painfully as possible.

Several weeks ago, at a very interesting session of the Department of Superintendence of our state, I saw one of these disturbers of the peace. He came in late, with a maximum of fuss. Regardless of the noted man speaking he stopped in the rear of the room, talking in an undertone; then he strode down the aisle and settled, or unsettled, himself with much arranging of overcoat, newspaper, etc., etc. His attempt at conversation with his neighbor on the right was frowned down, so he turned to the one on his left. Soon he bethought him of something he wanted to tell to a man in another part of the room, and trotted across. Then he went out for a smoke. Then he came in and did it all over again—until one wanted to send for the sergeant-at-arms.

I appreciated as never before the saying "You can't educate a grasshopper; he's too busy hopping."

One ought not to be too hard on such a fellow. He simply doesn't know any better; in some sections of the country he is described as "too dumb." But one cannot help wondering a few wonders: How did he get that way? How did he ever get a position that entitles him to come here? Why is he here if he isn't interested? What would he think, and say, if his teachers behaved that way when he is conducting a teachers' meeting?

If you take my advice and throttle such a one—and while you're at it do it thoroughly—you will be doing a service to the school board who gave him his time, perhaps his expenses, and with whom he is breaking faith; to the pupils in his care; to the teachers he left at home working the harder because he is absent, and who have a right to expect him to bring back to them progressive ideas and stimulating reports of what is being done elsewhere, that will be helpful all the coming year.

I heard a well-known educator say, some time ago, that the greatest service a superintendent can render his schools is by encouraging and inspiring his teachers. But a superintendent cannot be *giving* encouragement and inspiration constantly without some *getting*. And to my mind there is no better place for this getting than the meetings of the Department of Superintendence.

Faithfulness to duty, and to one's profession, does not necessarily mean attendance at three sessions a day. That would be not only very fatiguing, but most unwise. Group discussions at the hotel or during a walk in the open air, state or fraternity dinners, trips to industrial or educational plants, and the many other opportunities offered every year (to say nothing of fun for fun's sake) hold more for the average superintendent than does strict attendance at meetings.

Not long ago a college girl said, after a course by a specially successful professor, "That course *did* something to me." The Cincinnati meeting will *do* something to you and to your schools if you give it half a chance.

DEPARTMENT OF SUPERINTENDENCE MEETING

The special committee has recently announced the completion of the tentative program for the meeting of the Department of Superintendence, to be held at Cincinnati, February 21st to 28th.

Delegates to the convention will be able to secure round-trip tickets on the identification certificate plan, at one and one-half fare for the round trip, and tickets will be good via the same route in both directions.

The general sessions will be held in the Cincinnati Music Hall auditorium, which is near two large expostion halls, having a total floor space of more than 45,000 square feet.

The exhibits will be housed in the exposition halls and will include an exhibit of the best in school work. There will be an exhibit of art work, covering all grades from the kindergarten through the university, and embracing shop products, models, design and illustration, printing, textiles, and various applications of art work. There will also be an exhibit of civic work, illustrated by posters, pictures, models, etc., showing the teaching of community service. The exhibit of applications of the work-study-play plan by the Bureau of Education is worthy of special attention. It is one of the most extensive presentations of the platoon school problem ever made.

The exhibit by commercial and other organizations will be more complete than ever before. One hundred seventy-five units of space have been allotted for this part of the exhibit. All of the displays are intended to offer assistance to school authorities in building planning, selection of equipment, and choice of material for pupil activities.

THE PROGRAM

Sunday Afternoon, February 22nd

Department of Superintendence — Withrow high school.

Monday Morning, February 23rd

Department of Superintendence—Music Hall.

Monday Afternoon, February 23rd

Department of Superintendence — Hotel ballrooms.

Department of Elementary School Principals —Music Hall.

Association of Secondary School Principals—Withrow high school.

Council of State Superintendents and Commissioners of Education—Businessmen's Club.

Educational Research Association—Woodward high school.

Monday Evening, February 23rd

Department of Superintendence—Music Hall.

Tuesday Morning, February 24th

Department of Superintendence—Music Hall.

Association of Secondary School Principals—Withrow high school.

Educational Research Association—Woodward high school.

Department of Elementary School Principals —Music Hall.

Association of Secondary School Principals—Withrow high school.

National Council of Education—Ballroom, Hotel Sinton.

Council of State Superintendents and Commissioners of Education—Businessmen's Club.

Department of Vocational Education—Guilford school auditorium.

Educational Research Association—Woodward high school.

Association of High School Inspectors—Y. M. C. A.

Tuesday Evening, February 24th

Association of Secondary School Principals—Withrow high school.

Wednesday Morning, February 25th

Department of Superintendence—Music Hall.

Wednesday Afternoon, February 25th

Department of Elementary School Principals —Music Hall.

Association of Secondary School Principals—Woodward high school.

National Council of Education—Hotel Sinton ballroom.

Council of State Superintendents and Commissioners of Education—Businessmen's Club.

Department of Vocational Education — Guilford school.

Educational Research Association — Gibson Hotel ballroom.

Association of High School Inspectors—Y. M. C. A.

Thursday Morning, February 26th

Department of Superintendence—Music Hall.

Association of Secondary School Principals—Hughes high school.

Thursday Afternoon, February 26th

Department of Superintendence—Music Hall.

Association of Secondary School Principals—Hughes high school.

Thursday Evening, February 26th

Department of Superintendence—Music Hall.

A CORRECTION

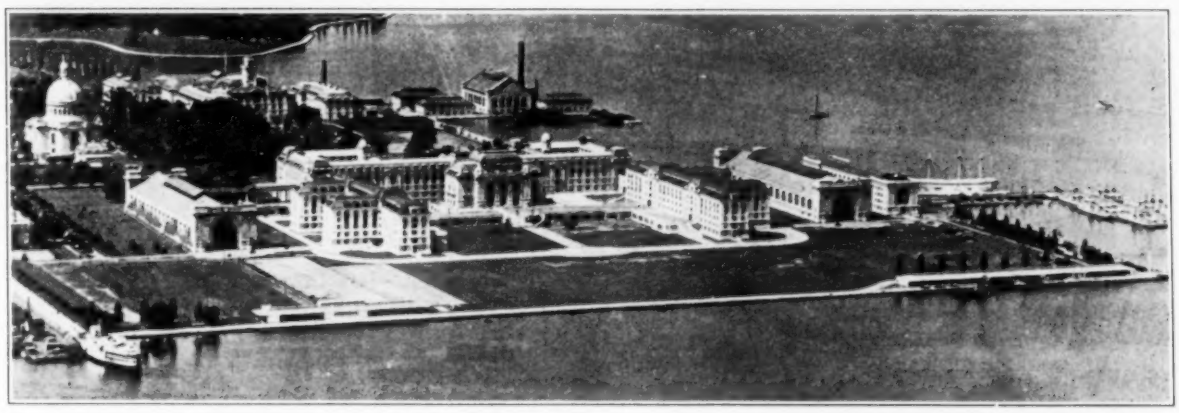
New School Buildings in Louisiana

A tract of fifteen acres has been purchased at Alexandria, La., as the site for a high school building. Plans for a structure costing $900,000 have been prepared by Architects Favrot & Livaudais, of New Orleans. In addition, an elementary school will be erected to cost about $200,000, and a school for colored children to cost about $100,000.

A building for high school purposes has recently been completed at Cheneyville, La., at a cost of $50,000. The site comprises three acres of ground, affording space for an athletic field.

Items printed in a previous issue of the Journal gave credit for these buildings to Virginia, instead of Louisiana.

Selected by the United States Naval Academy



Bancroft Hall Seamanship and Navigation Building
UNITED STATES NAVAL ACADEMY, ANNAPOLIS, MARYLAND

"The Floor That Keeps Its Promise"

AFTER years of hard usage—the T-M-B Flooring in Bancroft Hall and the Seamanship and Navigation Building, United States Naval Academy, looks like new and continues to give good service.

T-M-B Flooring forms a seamless and sanitary flooring for long, unbroken stretches in large buildings. It fits snugly around curves, pipes, etc., without a joint or crevice. It will not wrinkle or crack. It can be installed with equally good results over wood, cement, concrete, or tile. It will never rot or deteriorate. It is easily cleaned and pleasing in appearance. In installation and maintenance it is the most economical flooring on the market.

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Made and laid by us anywhere in the United States and Canada.
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CLEAN FLOORS

Under the Desks and in the Aisles

The class room floor presents a problem in its upkeep. Some floors are scrubbed; some are oiled. Whichever method you use you will save time and money with a Finnell Scrubber. A small model FINNELL goes under anything 6 inches from the floor and in any space 14 inches wide. It scrubs—and scrubs thoroughly—any kind of floor. It gets floors cleaner than mopping, or hand and knee scrubbing.

For oiling, waxing or polishing this FINNELL Scrubber is handy, efficient and economical. As easy to use as a vacuum sweeper. Easily transported. Folds up when not in use.

Finnell Scrubbers are made in a number of sizes. The larger models are the most economical and effective means of keeping corridor floors CLEAN. Mop Trucks also—in several models—prevent using dirty water on the floor. Save carrying water. Save mops.

Write for full information on the FINNELL SYSTEM, also booklet, "Electrical Scrubbing."

AMERICAN SCRUBBING EQUIPMENT SALES CO.
Hannibal, Missouri

FINNELL SYSTEM
OF ELECTRIC SCRUBBING

A motion picture demonstration of the FINNELL SYSTEM method will be arranged in your office upon request.

SCHOOLHOUSE DEDICATIONS

—The high school at Elkhart, Ill., was opened with a dedicatory address by State Superintendent Francis G. Blair. Addresses were also made by Patrick Bohan, president of the school board, and T. H. Lukenhill, county superintendent.

—The new Calvin N. Kendall school at Indianapolis, Ind., was opened with addresses by Superintendent E. U. Graff, President Charles R. Yoke, and Dr. Frank S. C. Wicks. Mrs. Jocelyn Courtright, principal of the school, presided at the exercises.

—The new Barnum school at Denver, Colo., was dedicated in an impressive manner. Addresses were made by Superintendent Jesse H. Newlon, Floyd Redding, school architect, and H. C. Cowell of the board of education.

—The new Union high school at Tarentum, Pa., was opened with a dedicatory address by Charles E. Dickey, county superintendent. The acceptance speech was made by T. B. Hepler for the board of education, and for the school by O. P. Ballentine. One of the features was an address by Dr. E. D. Warfield. Following are the officers of the Joint Board: Geo. T. Waffington, pres:; Chas. W. King, vice-pres.; T. M. Hathaway, sec.; John W. Girt, asst. sec.; J. G. Campbell, treas. Directors of Harrison Township: G. T. Waffington, J. C. Allen, J. W. Stephenson, T. B. Hepler, L. D. Reese, and K. M. Linhart. Directors, Brackenridge: Chas. W. King, E. E. Lawhead, F. W. Maurhoff, N. D. Kramer.

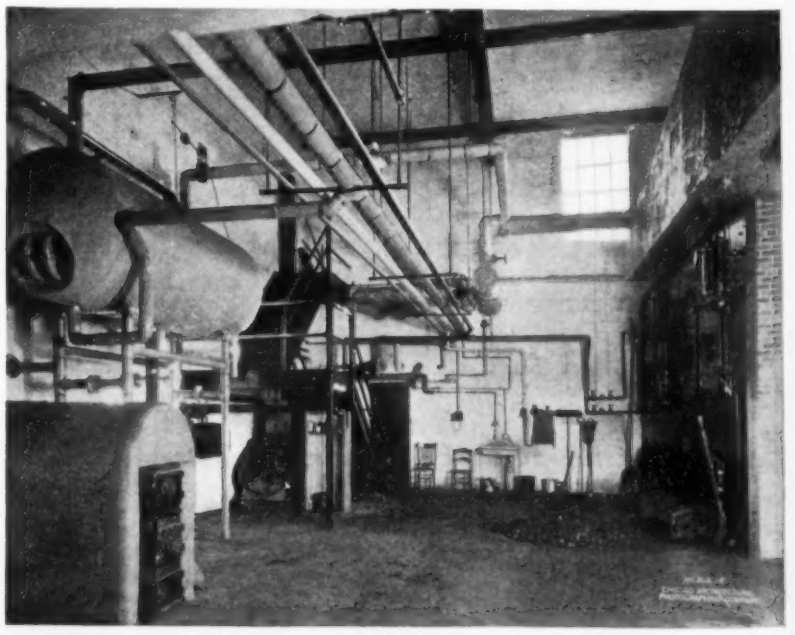
—The new $500,000 high school at Patchogue, N. Y., was dedicated with an address by Chancellor Chester S. Lord of the New York University. The school enjoys an eight acre site and will care for 900 students.

—Superintendent E. U. Graff was the principal speaker at the dedication of the new school 79 at Indianapolis, Indiana. The new Audubun school in the same city was also opened with dedicatory exercises. The speakers also included President Charles R. Yoke of the board of education, and Mrs. Charles Smith, president of the parent-teachers' federation.

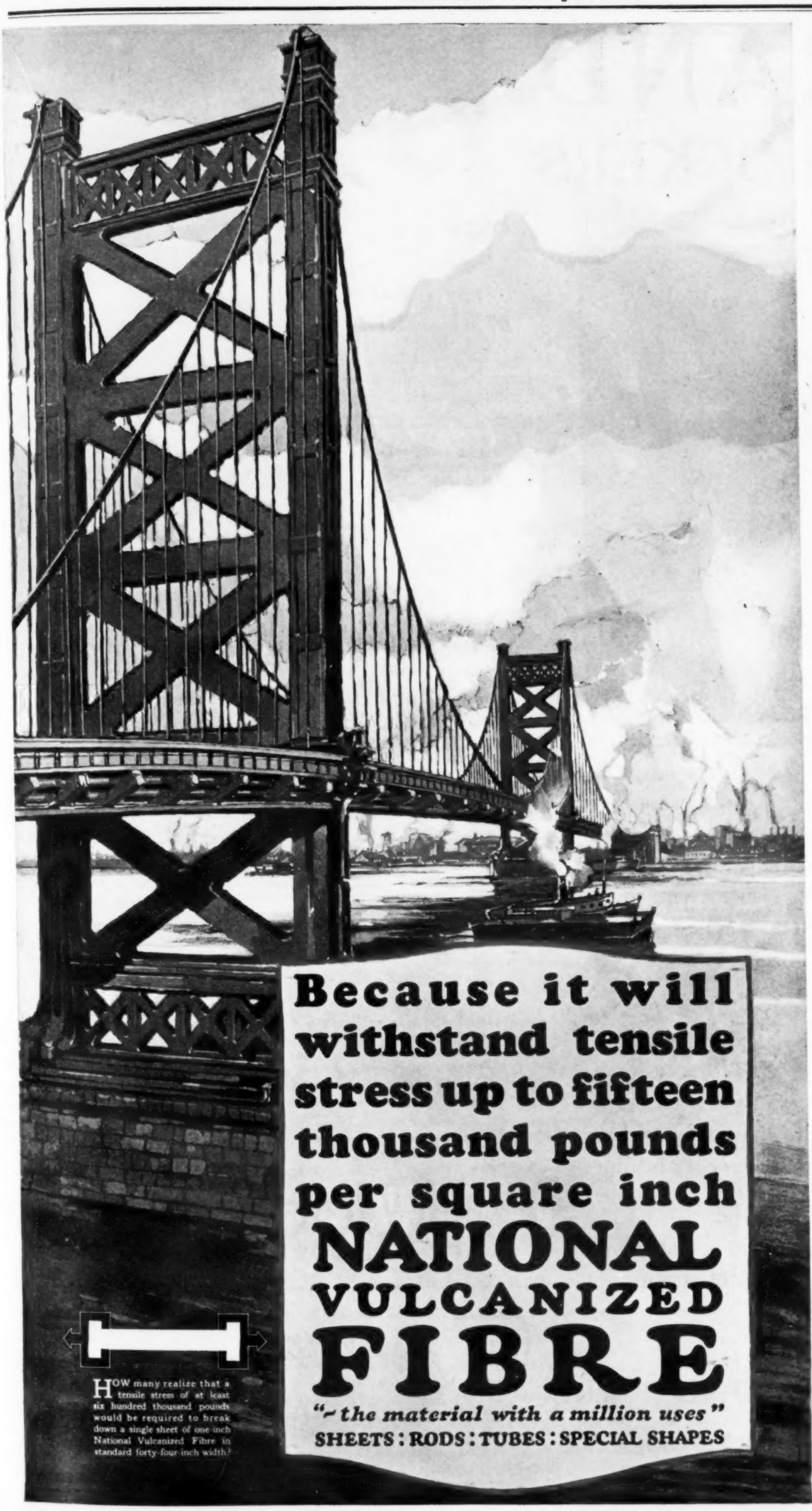
—The feature of the dedication of the new negro school erected at Decatur, Alabama, consisted of addresses by F. S. Hunt, member of the school board, and W. W. Benson, superintendent of schools.

—E. J. Lederle, county commissioner of education delivered the principal address at the dedication of the new school at Troy, Oakland County, Mich. The members of the school board are George Phelps, J. Frank Shearman and C. Martell.

COOKING ROOM OF THE DOMESTIC SCIENCE DEPARTMENT OF THE JULIA E. TEST JUNIOR HIGH SCHOOL, RICHMOND, IND.
Perkins, Fellows & Hamilton, Architects, Chicago, Ill.



POWER PLANT OF THE JULIA E. TEST JUNIOR HIGH SCHOOL, RICHMOND, IND.
Perkins, Fellows & Hamilton, Architects, Chicago, Ill.



Because it will withstand tensile stress up to fifteen thousand pounds per square inch

NATIONAL VULCANIZED FIBRE

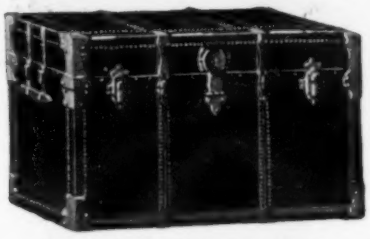
"~ the material with a million uses"

SHEETS : RODS : TUBES : SPECIAL SHAPES

HOW many realize that a tensile stress of at least six hundred thousand pounds would be required to break down a single sheet of one-inch National Vulcanized Fibre in standard forty-four-inch width?

YOU know National Vulcanized Fibre—it is the basis of VUL-COT, the waste basket that is being adopted as the standard by the Board of Education in America's leading city; the waste basket that holds waste—that does not allow the smallest particle of dust or dirt to sift through onto the floor; the waste basket that has a guarantee for five years' service—***and that is good for five years more!*** . . . And—it is highly probable that you are using trucks, boxes and barrels made of National Vulcanized Fibre.

But—we want you to know it better. We want you to know the true scope of its adaptability; to know something of what other manufacturers—in your industry and in other industries—are doing with National Vulcanized Fibre.



Wardrobe Trunks are made of National Vulcanized Fibre

The electrical industry is using National Vulcanized Fibre—as an insulating material. The textile industry is using National Vulcanized Fibre, not only for its trucks and roving cans, but for shuttles, spool heads, loom picks and scores of other purposes—because it will not crack, split or splinter.

Silent Gears are made of National Vulcanized Fibre

The automotive industry is using National Vulcanized Fibre for gears, gaskets, shaft couplers and cable conduit. The red jackets of your telephone switchboard plugs, the VUL-COT basket at the side of your desk and possibly the buttons on your wife's coat are made of National Vulcanized Fibre; —and as the train you travel on crashes over the rails each joint of these rails insulated for electrical signal systems uses the same material—the most durable known.

Just as fine tool steels are tempered to meet particular conditions, so National Vulcanized Fibre is made to various standards of hardness and toughness to meet the demands of particular uses. The name National Vulcanized Fibre stands for a standard of quality and adaptability.

In order better to serve the manufacturers of America, we maintain an organization of chemists devoted solely to service with customers and prospective customers—working on new problems that come up from day to day, finding out for a certainty just what particular grade of National Vulcanized Fibre will give best results under specific manufacturing conditions.

Whatever it is, put it up to National Vulcanized Fibre. It places you under no obligation

The National Vulcanized Fibre Company operates six great plants and maintains sales and service offices at New York, Boston, Philadelphia, Pittsburgh, Cleveland, Chicago, San Francisco, Detroit, Rochester, Birmingham, Denver, Toronto, Greenville, St. Louis and Baltimore. The main office is at Wilmington, Delaware.

NATIONAL VULCANIZED FIBRE

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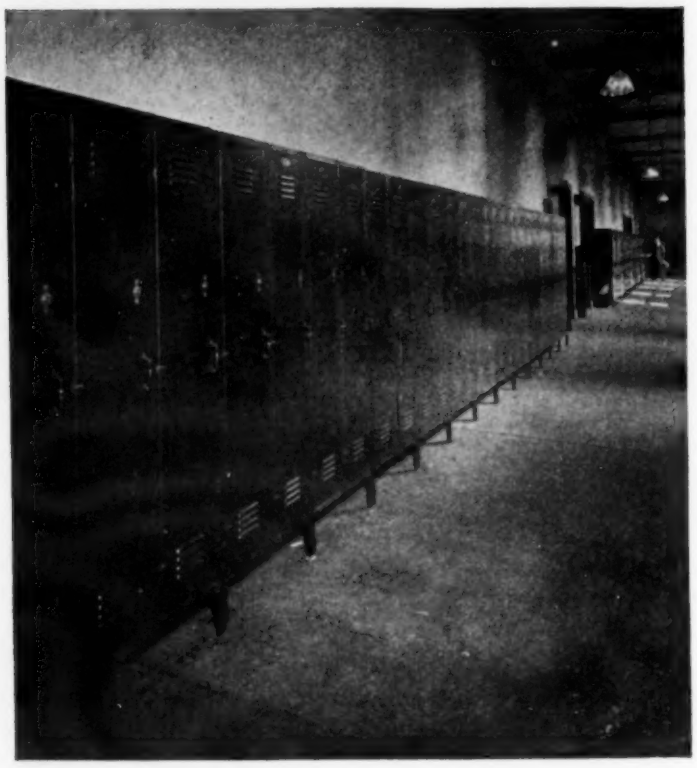
SHEETS : RODS : TUBES : SPECIAL SHAPES

DURAND
STEEL LOCKERS



Appearance counts for a great deal in school lockers. Visitors and parents are constantly being shown through the school buildings. They can hardly take an impression of neatness away with them if the lockers that often line the halls are shoddy and out of line—if the doors sag or do not close exactly.

Durand Steel Lockers are the product of a company that specializes in storage equipment. Each detail of construction is designed and built to maintain rigidity and exactness through the most abusing usage.

Of course such lockers are usable and presentable even after years of strenuous service.

DURAND STEEL LOCKER CO.

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The Safest, Cleanest, Most Easily Installed STAIR TREA

Made With a Steel, Yellow Brass or White Brass Base, Carborundum or Lead Filled.

Send for blueprints showing installations on every type of stairway, platform or landing. See our catalog in Sweet's. Sizes carried in stock in all widths for immediate shipment.

Safest because the foot can't slip on the effective lead or carborundum *anti-slip surface.*

Cleanest because dirt, cigars, etc., lodge in the open grooves, leaving the walking surface free for firm, effective foot contact. These grooves are easily swept clean.

Most easily installed because any desired width can be had by combining standard sections. Special anchors furnished to hold the Treads firmly in place when to be placed in new concrete.

Wooster Safe-Groove Treads prevent accidents, protect stairways for years against wear. The metal and anti-slip wear away simultaneously, evenly—the anti-slip always works.

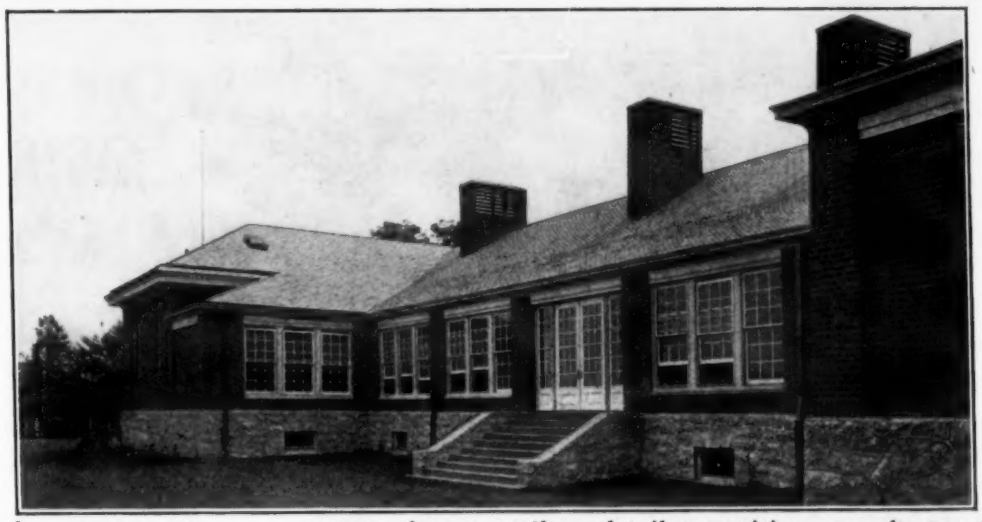
THE SAFETY STAIR TREAD CO., Wooster, Ohio

WOOSTER
SAFE—GROOVE STAIR TREAD

Nosings That Protect Stairs and Flooring

Wooster Nosing is designed to protect the edges of stair steps and the linoleum or other stair covering. Beautifully finished, cut to desired length, holes drilled and spaced, ready for installation. Made in yellow brass and white brass. Fastened with screws through flange. Send for blue prints showing six installations.

Slate Over-head and Under-foot For All Schools



School buildings are planned with the utmost care. Not only are lighting and ventilating problems studied carefully but questions of permanence, economy and beauty are all considered.

A large percentage of all school buildings are roofed with slate because that enduring material makes the best possible roofing. A slate roof means permanence for a weather-proof roof prevents the deterioration of a building.

Slate is used extensively in all but the cheapest of school buildings. Slate blackboards are standard; long life and perfect surfaces are their great virtues.

Slate shower stalls and toilet partitions are the most sanitary and easy to maintain. Slate stairways, baseboards, sinks, laboratory equipment and electrical insulation are most efficient and economical.

Floors and walks of slate not only give the finest footholds but are artistic and lasting.

Every school board should look into the advantages of slate for fire proofing. Taxpayers know that slate equipment means maximum service. Build or rebuild with slate.

Our service bureau will be glad to answer any questions. Write for free booklet on slate and its many uses.

SLATE

CONSIDER ITS USES

NATIONAL SLATE ASSOCIATION, 791 DREXEL BUILDING, PHILADELPHIA, PA.

SCHOOL LAW.

(Concluded from Page 96)

except the estimates of cost of construction, and hence the three per cent, if then paid, as the contract provided it should be, necessarily would have to be computed thereon. The estimates of cost were the plaintiff's estimates, prepared for the purpose of enabling the board to determine whether or not it would ask for bids, and must be held binding, in case of a decision, in good faith, not to proceed.

Again, the court held that the words "percentages then due" referred to the time of cancellation, and not to the cost on which those percentages were to be calculated. Clearly they were to be compensated for the work actually done, not for that which might be done. Equally clearly, they were to be measured by the value of the work at the time it was done, not at some future time, when the basis might be more or less, and certainly not when an unexpected contingency greatly changed the status.

So far as the record disclosed, it was held that the jury should have been told that the three per cent was to be calculated on the $643,025 estimate of cost of construction prepared by the plaintiffs, and accepted by the defendant, plus the additions of $190,515 made by consent of the board.

Finally, respecting the question of an alleged threat of suit by the plaintiffs, the court held that the evidence should not have been accepted, because among other reasons, the defendant, the board, had the right to cancel the contract and the reason for it was wholly immaterial.

LAW AND LEGISLATION

—The department of public instruction of Wisconsin has recently rendered the following rulings:

If a child of compulsory age, 7-14, is expelled from school on the ground of incorrigibility it becomes the duty of the parent or guardian to either secure his re-instatement in school under binding promise of good behavior or to have him committed to a state industrial school or some private institution where obedience to law and order is strictly enforced. The compulsory attendance statute, 40.73, inflicts a severe penalty on a parent or guardian who fails to properly care for the child in his home by strict observance of the truancy statutes.

When serious complaints concerning the conduct of the school and the general inefficiency of the teacher are made to any member of the school board, it becomes his duty to notify the other members and a board meeting should be held in order to determine the truth of the complaint. If the complaints are of sufficient weight, the matter should be taken up with the teacher at once at a board meeting. Neither of these meetings should be open to the public, but complainant and teacher should be given a fair and impartial hearing. In cases of this kind, the board acts judiciously. Friendly relations should be established between the board and the teacher in order that the board may be in position to advise the teacher.

Money raised by school entertainments belongs to the school and not to the district, and while the district treasurer may be the custodian of this money for the school or the parent-teachers' organization, it cannot be legally spent by the board for school district purposes. It may, however, be spent by the school or the parent-teachers' association for some school purpose.

A teacher has jurisdiction over the behavior of the pupil on his way to and from school, if such behavior tends to slight or diminish the teacher's authority to enforce discipline.

If the teacher is ill and a substitute must be employed, such substitute must be legally qualified and must be engaged by the board and not by the regular teacher.

A meeting held by two members of the school board, without legal notice to the school clerk (the third member), is an illegal meeting and the clerk cannot legally draw an order for cost of a cement walk laid on the school grounds under the direction given by the two members at a void meeting, and if any part of a cement walk is laid on any land not the property of the district, even though it is of much convenience to the children, the contractor who lays this walk must not look for his pay from the district treasury. The district electors cannot divert school funds for such purpose.

—The rule adopted by New York state teachers' retirement board requiring teachers in disability claims to file application thirty days in advance of a regular board meeting, has been held to be "arbitrary, unwarranted by the statute and repugnant to the spirit of the law" by the Supreme Court. The court issues a mandamus order directing the board to pay to Miss Mary E. Fitzpatrick, sister of the late Elizabeth V. Fitzpatrick, a teacher at Troy, N. Y., the sum of $7,463 as full time allowance to the beneficiary of the claimant. The board had refused on the ground that the application was not filed within the prescribed period.

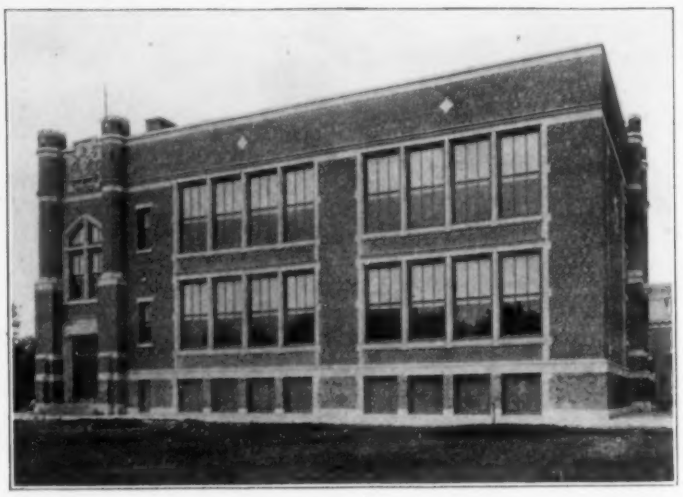
—At the November election Colorado defeated the proposal whereby it was intended that the state should go into the school book printing business. Amendment number one, which provided for a state plant to print all state printing, including school textbooks, was defeated by a vote of 172,358 to 25,948. These figures are based on 1,049 out of 1,493 precincts.

—The legislative committee of the California Superintendents' Association has recommended the passage of a law providing for the recall of school board members.

—The city council of Milwaukee, Wis., adopted an ordinance several years ago providing that all contracts performed for the municipality observe a minimum wage and the eight hour day. When the board of education contracted for the construction of the school building, it was contended that the ordinance applied. The contractor appealed to the local courts, however, with the result that he lost out. He then appealed to the supreme court, which sustained his contention. The court held that the city council had no authority over building contracts entered into by the school board.

—The legislative program of the Nevada State Educational Association provides for larger units in school administration, also that the salary of the state superintendents be raised to $6,000; that district superintendents be appointed by the state board of education; that a teacher tenure law be enacted, and that the apportionment of school moneys be based on average attendance.

—McHenry Rhoads, state superintendent of Kentucky, calls attention to the inequalities for educational opportunity throughout that state. Attention is called to the fact that eighty-five



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EDWARD LEBER, ARCHT.,
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THE WILLIAMS PLANK FRAME REVERSIBLE WINDOW EQUIPMENT PROVIDES:

Ideal overhead ventilation
Reversibility for inside cleaning
Greater light area
More weathertight construction
Better shading facilities
Simplified frame construction
Weightless windows

The Advantages of the Williams Reversible Window Fixtures

have been enjoyed to no small extent by the small as well as the large schools throughout the country. The weather-tightness of our Plank Frame Equipment, for instance, cuts down the heat loss around the windows to the minimum this season of the year. This is a real factor in maintaining comfortable conditions in the rooms.

The building displayed shows one of three installations at York, Pa., where our equipment has been in service over 10 years. As to the satisfaction our equipment has been giving in York, we would be glad to refer to Mr. M. O. Lewis, who has been Building Superintendent there for many years.

THE WILLIAMS PIVOT SASH CO.

E. 37th and Perkins Ave., Cleveland, Ohio.

counties of Kentucky are unable to pay the minimum teachers' salary of $75. The days taught in the cities average 184 and in the rural schools throughout the country 137. The cities spend $30 for the education of each child and the counties $12.75.

—The supreme court of Oklahoma has upheld the contention that the maintenance of the schools is a function of the state. The validity of an act appropriating $650,000 to help out poorer districts in maintaining a proper salary schedule was contested. The court held that the burden of education rests on the state; that such an appropriation is not so much state aid to districts as it is part of the fulfillment of the obligation to maintain a system of public schools placed upon the state by its constitution; that district tax levies are in the nature of aid to the state; and that the limit of district tax having been reached, the state must "carry on" to the point where a system with some degree of uniformity and equality of opportunity is maintained.

—The bill for county unit of school control, which was defeated by the legislature of Indiana two years ago, will come up for consideration again. The bill was strenuously opposed by the Indiana school trustees' association. The question is now being debated before farmers' organizations. Mrs. Verna Hatch of Huntertown says: "School control through a county board would eliminate politics, equalize educational opportunity and make for greater economy and efficiency." Mrs. Charles W. Sewell of Otterbein who opposes the county unit says: "I am opposed to this step because it would take the control of the school from the farm homes. They say that county unit control would be more efficient, that it would remove politics from the administration of school affairs. I don't know about that for I can't say who would be on the board. Such a measure would do one thing successfully, and that is it would break up township lines."

—The new school board of the Town of Lake, near Milwaukee, Wis., dismissed the teacher of a one-room school and appointed a successor. When the successor came to claim the school she found that the occupant, Miss Margaret Schultz, refused to surrender. "I have been appointed for a year, have a contract to that effect, and am doing my work well," she said, "I shall simply stand upon my rights and remain." The school board then took the matter into the courts, and lost out. The court found that two members of the board had, outside of a regular meeting, agreed to dismiss the teacher and appoint her successor. This was held to be illegal. Besides no dismissal could be engaged in without establishing a cause.

—The Syracuse, N. Y., board of education has refused to carry out the teachers' equal pay law. To carry out the law would require $50,000 more money at the beginning of the year whereas the board has only $22,500 which could be used for this purpose. It would also increase the payroll by $180,000 per year. For the present the law will remain a dead letter.

—The law of libel as applied to school officials is discussed by Prof. I. N. Edwards, of the University of Chicago, in a recent number of the School Review in which he points out that "The law recognizes two kinds of privileged statements, those which are absolutely privileged and those which are qualifiedly privileged. An absolutely privileged statement is a statement for which no action will lie even though false and made with malicious intent. Such are statements made by members of a legislative body in connection with official duties, by signers of petitions to legislative bodies for the redress of grievances, or by a judge sitting on the bench. A qualifiedly privileged statement is a statement made by a person in connection with some official or social duty to another person or persons having a similar official or social interest." He cites several libel suits brought against school authorities who on moral grounds expelled students and who in turn were sued for unfavorable statements made. The courts in each case held that such statements growing out of their duties cannot be deemed malicious and hence are not culpable.

—The Washington Education Association will seek legislation whereby county superintendents will be appointed by a regularly constituted board of education instead of being elected by popular vote. President W. H. Grayum in comment of the proposed law said: "It is not right that a superintendent at the end of his term, even though it is successful from every standpoint, should have to get out and electioneer for the position when a board well informed in the workings of school affairs could make a more intelligent decision at a great deal less cost to the state."

—The new $400,000 high school at Saratoga Springs, N. Y., was opened with addresses by Dr. Frederick C. Ferry, president of Hamilton College and Dr. James Sullivan, assistant commissioner of education.

—The school bond issue election held at Elgin, Ill., failed. The reasons are ascribed to the fact that the city had engaged in heavy obligations for its sanitary interests. On top of this came the assessment notices to a large section of the city for a huge street improvement project now in process of construction. The two main reasons, coupled with the increase of the tax rate as necessarily proposed by the school project, defeated the issue for an enlarged school building program at this time. It is believed that the whole matter has simply been deferred to a future date. The schoolhouse program had anticipated the future expansion of the entire school plant.

SCHOOL BUILDING STATISTICS FOR 1924

Month	School Bond Sales[1]	CONTRACTS LET[2] No. of Projects	Square Feet	Value
January	$20,008,462	149	3,114,000	$ 18,519,000
February	40,828,295	233	5,839,000	31,155,000
March	37,021,484	276	5,748,000	34,062,000
April	27,705,696	304	5,757,000	33,522,000
May	17,809,213	407	6,908,000	40,582,000
June	36,325,100	446	5,262,000	34,807,000
July	18,645,980	527	6,150,000	39,511,000
August	26,129,566	411	4,401,000	31,771,000
September	17,193,872	345	4,857,000	31,728,000
October	12,475,106	236	4,127,000	27,675,000
November	15,820,570	....	.....	.....
December	.....	....	.....	.....
Totals	.....	....	.....	.....

[1]Bond Sales: Figures cover the sale of school bonds for the entire country. While school bond sales furnish the most accurate basis for determining the trend in school construction, not all of the moneys used for school construction are raised in this manner.

[2]Contracts Awarded: These figures cover construction activities in the 27 states east and north of, and including, North Dakota, South Dakota, Iowa, Illinois, Tennessee, South Carolina. Compiled from U. S. Department of Commerce Reports.

ELECTRIC TIME
and
PROGRAM CLOCK SYSTEMS

have demonstrated their Service in Altoona, Pa. Schools

JUNIOR HIGH SCHOOL, ALTOONA, PA.
JULIAN MILLARD, ALTOONA, PA., ARCHITECT.
WM. B. ITTNER, ST. LOUIS, MO., ASSOC. ARCHITECT.

AFTER having given satisfactory service for many years in the Senior High School, the Altoona Board of Education naturally selected Landis Equipment for use in their fine new Junior High School.

Both of these systems are not only most complete in all respects, but are extensive in size, the Senior High School system controlling upwards of 40 Secondary Clocks and Bells and the Junior High School controlling upwards of 60 Secondary Clocks and Bells.

We can give your School the same quality of service.

SENIOR HIGH SCHOOL, ALTOONA, PA.

THERE is a Landis System to meet all School requirements, no matter how large or small, how simple or complex.

Let us go into the matter with you and your Architect. Our Engineering Department is at your service without obligation.

Estimates, specifications and layouts promptly furnished.

Write nearest office today for data.

LANDIS ENGINEERING & MFG. CO.

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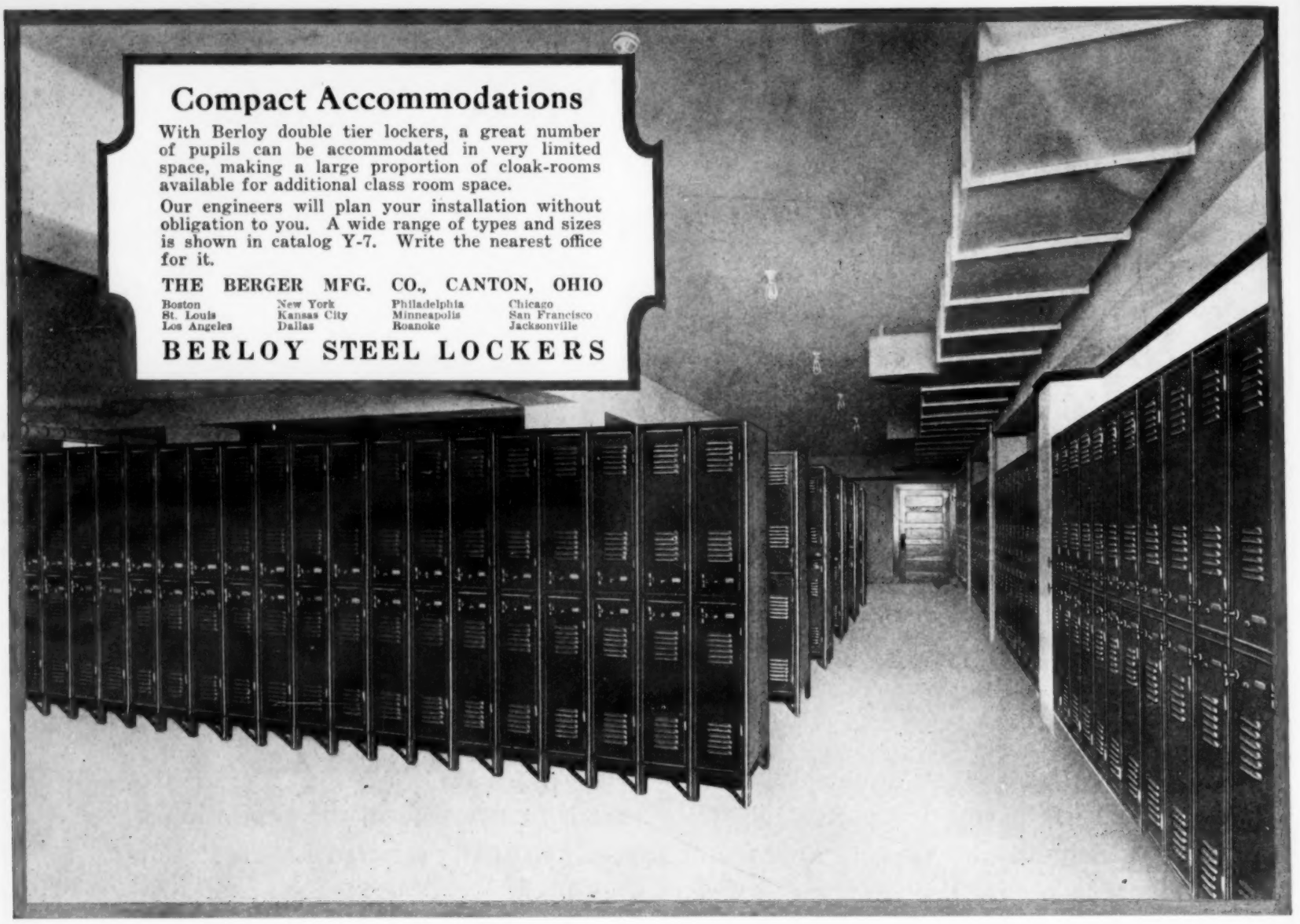
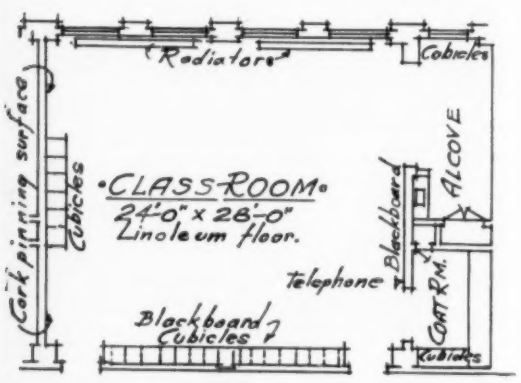

Compact Accommodations
With Berloy double tier lockers, a great number of pupils can be accommodated in very limited space, making a large proportion of cloak-rooms available for additional class room space.
Our engineers will plan your installation without obligation to you. A wide range of types and sizes is shown in catalog Y-7. Write the nearest office for it.
THE BERGER MFG. CO., CANTON, OHIO
Boston St. Louis Los Angeles
New York Kansas City Dallas
Philadelphia Minneapolis Roanoke
Chicago San Francisco Jacksonville
BERLOY STEEL LOCKERS

THE PROBLEM OF CLASSROOM SEATING.

(Continued from Page 89)

In summarizing the problem of classroom seating we may say that it is worthy of consideration because the character of the school work that is done is closely related to the problem of seating as has been shown. It is not unthinkable that some of the poor teaching of the past would have been much better if the pupils had been seated properly so as to lead to the right kind of teaching. This article will have accomplished its purpose if it helps in any way to lessen the number of classrooms, in which children sit in straight rows looking at the back of each other's heads, solemnly facing the teacher.



TYPICAL CLASS ROOM GRADES 1-3 INCL.
Scale 1/8"=1'-0"
0 2 4 6 8

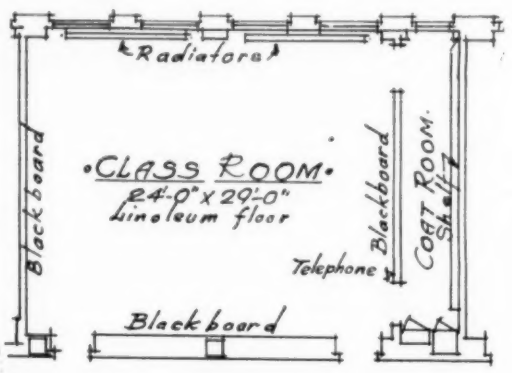
JOHN REID JR. ARCH'T.
SAN FRANCISCO.

TYPICAL CLASSROOMS, SAN FRANCISCO, CALIF.
Mr. John Reid, Jr., Architect.

The plans are for typical classrooms, grades one to three inclusive, and grades four to six inclusive. The following special arrangements are made:

a. Blackboard 3'-0" high on one end and the side opposite windows. Top of chalk rail—

1st grade—21"
2nd grade—23"
3rd grade—26"



TYPICAL CLASS ROOM GRADES 4-6 INCL.

b. **Pinning Areas:** Cork carpet shall be placed above blackboards to height of 20", and below the chalk rail level in spaces not otherwise occupied by cubicals, etc. Pinning carpet will be placed on all other walls of the room not occupied by blackboards, to extend from baseboard to height determined by the pinning strip above the blackboard.

Behind all radiators shall be placed not pinning carpet but burlap. The free walls of the alcove shall be covered with cork carpet to a height determined in the classroom proper.

Blackboard is to extend up for a width of 12 feet at teachers' end to height of top of pinning rail, with no pin strip over this 12 ft. length of blackboard.

c. **Cabinets, Lockers, Cubicals, Etc.: Cubicals:** Approximately 36 cubicals shall be provided for each room; as many as possible should be accommodated in the alcove. They can also be placed under chalk rail in furred space between classroom and corridor and some may be placed in the coat room. Cubicals will be approximately 2' high, 14" wide and 16" deep.

Cabinets: Cabinets shall be placed in the coat rooms and shall be same as specified for kindergarten. They should be placed so that there will be a clearance from the floor of about 4'-6".

Teacher's Locker: Each cloak room should have built-in locker for teacher's personal use.

Material Locker: In the alcove, a locker for materials is provided, approximately 30" wide, 24" deep, with movable shelves.

d. **Plumbing Fixtures:** A small sink, 12" x 16" with drainboard is placed in the alcove.

e. **Electric Outlet:** Place outlet in alcove.

f. **Clothes Pole:** Approximately 9' of clothes pole for hangers is provided in the coat room. In addition, there are strips for hat and coat hooks.

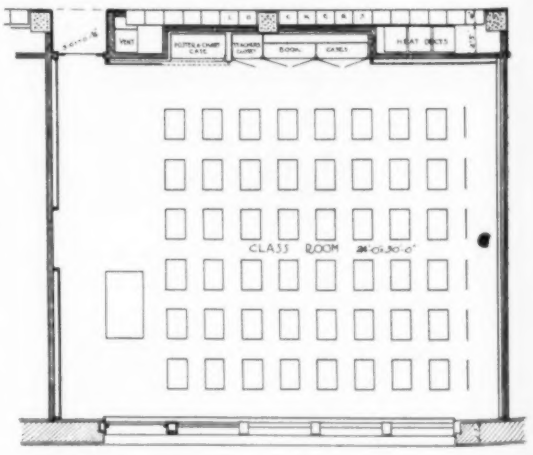
g. **Shelving:** No exposed shelving of any description.

The classrooms for grades for four to six inclusive are equipped as follows:

a. **Blackboards:** 3½' high, on three sides of the room. Chalk rail height, 4th and 5th grades, 28"; 6th grade, 30". Space between chalk rail and base board is covered by prepared burlap, similar to wainscot in corridors.

b. **Pinning Strip:** A pinning strip of cork carpet at least 18" above the blackboard. The fourth, or window, side of the room is covered to the required height by cork carpet. **Note:** The pin strip runs across the top of blackboard at teachers' end same as on side opposite windows.

c. A hat and coat room shall adjoin each classroom and shall contain locker for teacher; locker, with adjustable shelves for books and material. The walls of the coat rooms to be of T. & G. with coat and hat hook strips. Shelf on side only.



TYPICAL CLASS ROOM
CHICAGO ELEMENTARY SCHOOL

MR. JOHN C. CHRISTENSON,
Architect of the Board of Education.

In the Richard J. Reynolds High School, Winston-Salem, N. C., Hockaday paint has been used throughout.
Charles Barton Keen, Architect.

There's no Paint like Hockaday for Schools

Hockaday paint is unsurpassed for use in schools because its high gloss offers the greatest resistance to the defacements with chalk and pencil so common, especially to grade schools.

No other paint will stand up under so many washings and scrubbings as Hockaday. Continued cleanings do not impair its appearance. Consequently walls can be made to look like new, regardless of how badly soiled or marked they may be.

Hockaday Paint lasts longer—5 to 12 years; does not air check or peel, stops lime burn and is more sanitary because it fills all pores and fine cracks. Wherever it is used it is known to be the most economical paint in the long run because repaint needs are minimized.

School boards are urged to keep a copy of our big, illustrated book—"PAINT"—on file for ready reference. It covers completely every painting problem common to schools.

THE HOCKADAY COMPANY
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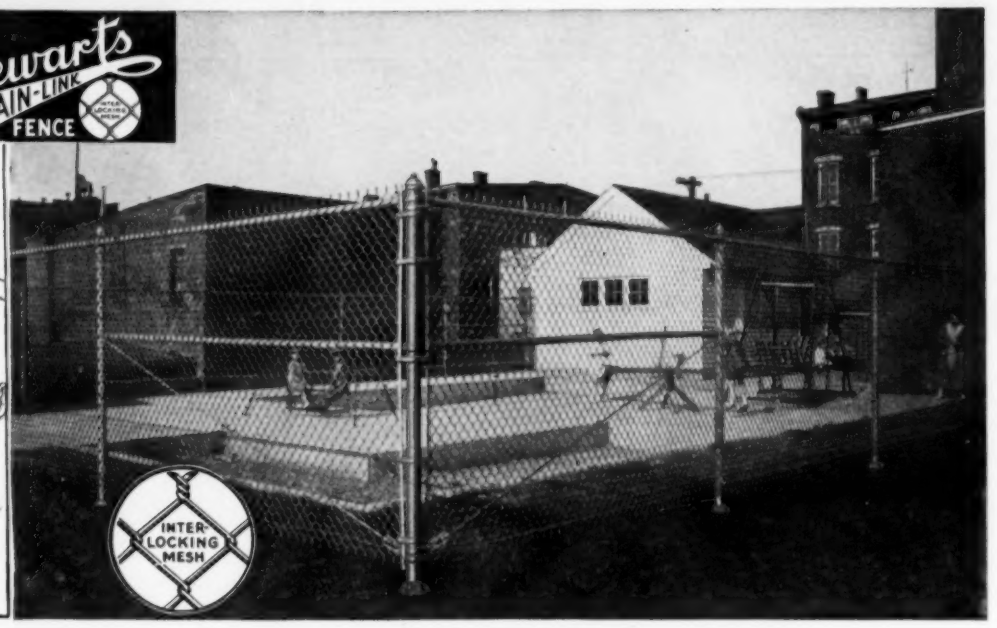
THE WASHABLE PAINT FOR ALL INTERIORS

Courtesy—*Birmingham News*



Stewart Fence Style OT

Responsibility is up to the School Authorities

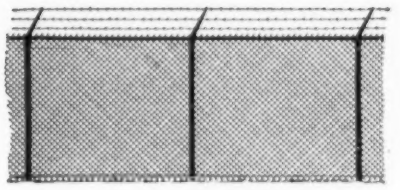
Stewart Fence saves children's lives

The educating of school children is secondary to safeguarding them against the threat of injury or death. Today's increasing traffic dangers make a high, unclimbable fence for the school yard, playground or athletic field a necessity to prevent the kind of accidents that are constantly snuffing out the lives of unrestrained school children.

Stewart Chainlink Wire Fence is bought by school boards, park and playground committees, because it gives maximum protection at low yearly cost. The posts, made of the best tubular steel, have unusual torsional strength: the fittings are made of pressed or forged steel of special design; the fabric is permanently galvanized by the new hot-dipping AFTER WEAVING process.

Stewart Service is available everywhere. It relieves you of responsibility, takes care of all erecting problems. Estimates furnished without obligation.

Address Wire Fence Division for complete information



Let us give you estimates on your athletic field fence NOW
This is Stewart Fence Style 3T

The Stewart Iron Works Company, Inc.
"The World's Greatest Iron Fence Builders"
420 Stewart Block **Cincinnati, Ohio**

THE MODERN TREND IN THE SCIENCE OF VENTILATION.

(Concluded from Page 56)

clothing between winter and summer and the corresponding physiological reactions between being out of doors and indoors should have considerable bearing upon the comfort line.

In the measuring of the quality of ventilation we should, no doubt, therefore, use different effective temperatures for comfort for the different seasons of the year and it may be that the comfort line should be made a function of the outside effective temperature.

THE SCHOOLHOUSE ARCHITECT—OUTSIDE OR LOCAL TALENT—WHICH?

(Concluded from Page 63)

school architecture has become highly specialized and that school authorities cannot afford to experiment with the local man who may have many friends but no experience in the task to be assigned.

The construction of a schoolhouse may involve, from its inception to its completion, many controversies as to its location, its appointments and its cost, but it ought never to raise the question as to the choice between an experienced and inexperienced schoolhouse architect.

THE ROCHESTER ELEMENTARY SCHOOL PLANS.

(Continued from Page 65)

rail. These shades will transmit a considerable percentage of the light, and will diffuse it. In the assembly hall where slides or motion pictures will be projected, opaque shades will be installed.

Heating and Ventilation

The boiler and the coal storage rooms will be located outside the main walls of the building so as to insure maximum safety and to provide for convenience of expansion. The heating and ventilation will be by the split system, steam being generated in return tubular boilers supplying the radiators located under the windows on the outside walls. These radiators are under automatic temperature control, a thermostat being located in each room. Air for ventilation will be taken from the top of the building, tempered, reheated, humidified and delivered to the classrooms on the basis of 30 cubic feet per minute for each pupil, at a velocity that will permit of satisfactory air motion without causing discomfort.

The temperature and humidity of the air entering the classrooms also will be under automatic control. Arrangement will be made to permit of the recirculation of air for the purpose of rapidly warming the building before the pupils arrive in the morning. The heating and ventilation plant is designed to give adequate air movement, proper humidity, normal temperature, and absence of dust and odors. The heating system will be installed so that the auditorium-gymnasium, toilet rooms, and the rooms which will be used for checking of clothing during evening use may be separately heated. This will obviate the necessity of operating the entire plant when only a part of the building is in use.

This building will be equipped with a permanent vacuum cleaner system, with outlets piped to each room and the corridors, and a connection in the boiler room for cleaning the boiler flues.

Each classroom will have as built-in equipment genuine slate blackboards in the front of the room and across the rear of the room. Above this blackboard will be a fifteen inch cork tacking strip. At the teacher's end of the room will be a sliding blackboard having two movable leaves, each containing a single piece of slate three feet by six feet. Along the side of the room flush with the face of the wardrobes will be two bookcases and a teacher's locker.

The Cost Items Enumerated

Contractors for the Andrew J. Townson School No. 39, built in accordance with this plan and specifications were awarded August 11, 1924, as follows:

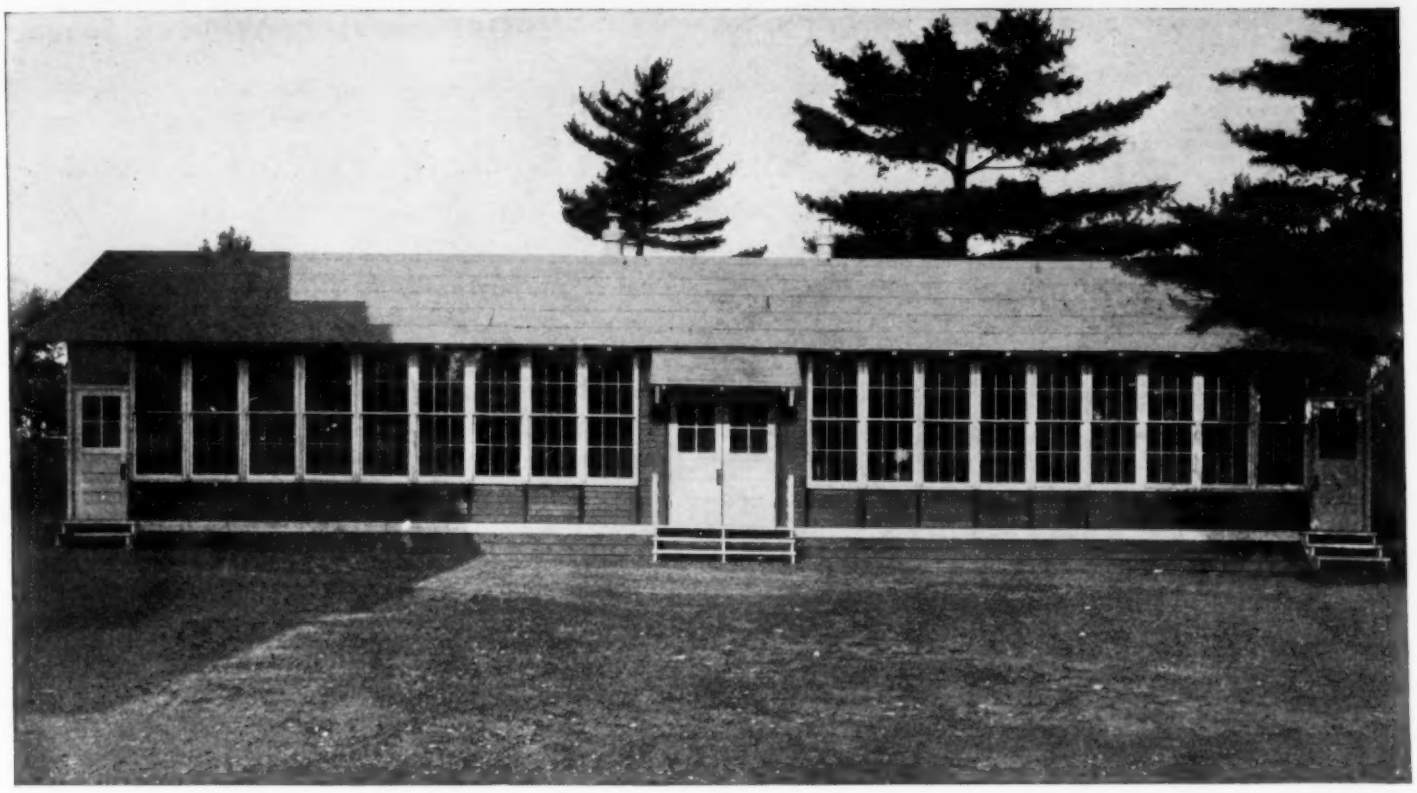
Mason work	$179,973.00
Stone work	17,775.00
Tile, terrazzo and marble work	3,688.00
Carpenter work	44,000.00
Painting	3,720.00
Roofing and metal work	5,698.00
Heating and ventilating work	36,287.00
Plumbing work	13,262.00
Electric work	7,464.00
Vacuum cleaner	2,988.00
Total	$314,855.00

Contracts for Charlotte School No. 38, built in accordance with this plan and specifications, were awarded September 29, 1924, as follows:

Mason work	$174,971.15
Stone work	15,775.00
Tile, terrazzo and marble work	3,488.00
Carpenter work	39,791.00
Painting	3,600.00
Roofing and metal work	5,240.00
Heating and ventilating work	36,680.00
Plumbing work	16,200.00
Electric work	8,743.00
Vacuum cleaner	2,988.00
Total	$307,476.15

Two factors contribute to the variation in costs in these buildings, the first being that bids on the Charlotte School were opened after the bids on School No. 39 were made public so that keener competition resulted, the other being rock excavation necessary at School No. 39 while there is none at School No. 38.

The building will contain 873,395 cubic feet, the building cubiture being determined according to the rules of the Committee on the Standardization of School Buildings. This results in a cost of 35.2 cents per cubic foot. Adding to this the estimated cost for the linoleum floors, contract for which as yet has not been awarded, the final cost will be approximately 36.3 cents per cubic foot.



COMPLETE *Your* SCHOOL PROGRAM *Now*

MANY school boards are putting off starting certain needed courses to complete their educational program because no room is available to house such classes. Commercial courses, classes in Manual and Domestic Arts, Physical Training—all the adjuncts of modern education—require space.

The graduates of your schools must compete in life with those from other schools which offer such courses. You need not handicap the children of your district by putting off establishing such courses until you erect that new building.

House them in Circle A school rooms, sectional and portable.

Immediate need for accommodation can be filled with Circle A Portable Schools of one, two, three or four rooms. Circle A Schools conform to local regulations and are well lighted, well ventilated, and well insulated against summer heat and winter cold. They last for years, and can be sold or moved and used elsewhere.

A Comfortable, Substantial School for Forty in Five Days

Circle A Portable Schools are completely finished inside and outside. An inch of dead air space insulates against heat and cold. Sections are three feet wide, wall height; door sections and window sections have doors and windows already hung, with all hardware, etc.

Sections are bolted together through the studding of each section, S-joints making connection weathertight.

A Circle A School when erected is suitable for permanent occupation if desired. Yet it can be erected in from five to fifteen days, depending on the number of rooms.

Send for fully illustrated descriptive booklet containing worth-while information for every school official interested in the building program.

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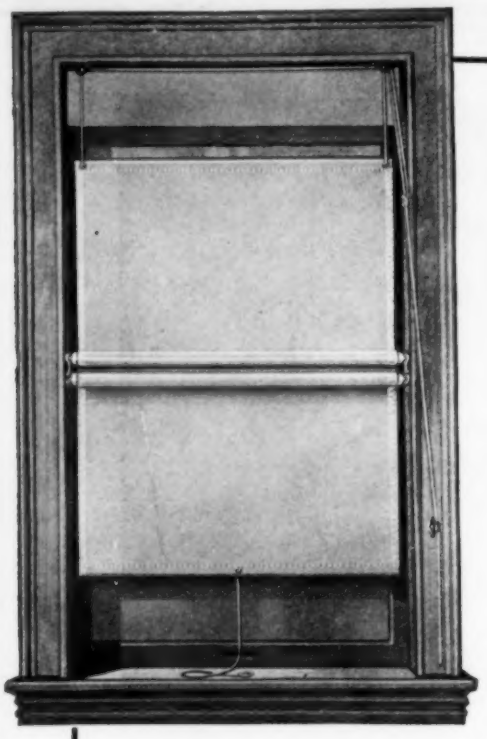
SECTIONAL

CIRCLE A SCHOOLS

PORTABLE

Circle A Portable Bleachers ***Circle A Portable Gymnasiums***



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Window Shades of Every Description Made to Order

The AIRANLITE *Double Roll Shade*

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IS THE PERFECT SCHOOL SHADE.

It gives a correct and scientific diffusion of light and permits window ventilation.

It is easy to adjust and cannot get out of order—is strong and durable—good looking and well made.

AIRANLITE Double Roll Shades can be made of any standard shade cloth or of canvas.

For school shades our special woven tan colored canvas is recommended.

The Patented Adjustable Light Stop does away with streaks of light between rollers and the patented brackets hold shades in perfect alignment, giving the appearance on the outside, of being one continuous shade.

For Long and Satisfactory Service Use AIRANLITE DOUBLE ROLL SHADES
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They Increase the Efficiency and Improve the Health of Teachers and Pupils.

Write for Prices and Catalog.

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CAUTION!
Users of double roll shades are cautioned against infringements and imitations, as the AIRANLITE Patented Double Roll Shade is fully protected by U. S. Patents.
Be sure you get AIRANLITE Double Roll Shades mounted on AIRANLITE Patented Brackets.

HOW A SCHOOL DISTRICT CAN OBTAIN THE BEST PRICE FOR ITS BONDS.

(Continued from Page 74)

$80,500 is required to meet the payments. Each succeeding year a larger portion of the bonds become due, to and including the eighteenth year, but always the interest payments steadily decrease. In all the interest requirement on this serial issue is $604,650, but if the entire issue remained outstanding through the whole twenty years the interest requirement would be $1,000,000. Serial maturities may be arranged to suit the needs of the issuing district. Tables are available that obviate the necessity for any involved calculations and make the adoption of this plan very simple. Or, a little simple arithmetic applied to the accompanying table will enable the clerk of the board to whittle it down to the size issue his district is contemplating and thus demonstrate how it will actually work out.

The Municipal Securities Committee of the Investment Bankers' Association of America, Mr. Alden H. Little, Chairman of the committee, is constantly suggesting practices and improvements that will enable school districts and other taxing subdivisions to borrow money at the lowest rate and on the most attractive terms. The committee is always willing to make suggestions in specific cases and can be reached through the office of the Investment Bankers' Association of America, 105 South La Salle Street, Chicago, Ill.

A SCORE CARD FOR SELECTING A SITE FOR A CONSOLIDATED SCHOOL.

(Continued from Page 80)

9. Attractive

Sites that do not have the windswept barrenness, barrenness that will take years to eradicate, would come under this heading. This can only be described as that site which appeals to the eye.

10. Skyline

In several of our states this is an important factor. A site should have the sun rays on it at least during all the school hours. Some factors that prevent this demand are mountains, hills, forests and high buildings.

WINSTON-SALEM'S NEW HIGH SCHOOL.

(Continued from Page 86)

rooms and offices. All the facilities are complete and easily accommodate the 1,050 students who are attending the Reynolds high school. The approximate upkeep and maintenance expenses of this fine new high school plant aggregates $75,000 a year. This estimate is only an approximation as the school buildings have not been in use long enough to provide definite figures.

The Reynolds high school and the memorial auditorium in Winston-Salem were designed by Charles Barton Keen, a local architect. Doctors Strayer and Engelhart of Columbia University, New York City, acted as educational consultants on the design of the buildings.

PERSONAL NEWS OF SUPERINTENDENTS

Principal John F. Barnicle, of the Saxonville, Mass., junior high school, has accepted an appointment as sub-master in the Lewis District, Boston. Principal Charles O. Ruddy of the Bigelow School, Marlboro, Mass., succeeds Mr. Barnicle.

—Supt. S. M. Andrews, of Walsenburg, Colo., is completing his seventeenth year in the Walsenburg schools.

—Mr. Isaac E. Stutsman, formerly of Fort Morgan, Colo., has become superintendent of the Logan County high school and of the Sterling City Schools. The Logan county school system includes, in addition to the Sterling high school, twelve high schools in other towns of the county. Mr. Stutsman succeeds John A. Sexson, who resigned to accept the superintendency at Bisbee, Ariz.

—Mr. R. H. Beall, superintendent of schools of Bellevue, O., has been elected president of the Town Superintendents' Association, organized at Des Moines in connection with the state teachers' meeting.

—Mr. B. J. Burris, who retired as state superintendent of schools of Indiana, has been made a member of the state board of education to succeed Dr. G. B. Grose.

—Miss Ann E. Erickson has been elected superintendent of schools at International Falls, Minn., to succeed the late G. A. Olson.

—Supt. Harold Steele, of Saginaw, Mich., was unanimously elected chairman of section two of the Michigan State Teachers' Association, by the three thousand three hundred members of the Association who attended the meeting held at Bay City.

—George S. Goodell, of Pennsylvania, has been elected superintendent of schools at Nantucket, Mass. Mr. Goodell recently was given a master's degree in education by the Council of New York University, where he secured his B. S. degree, and where he was awarded a fellowship in the School of Education. Mr. Goodell was for several years engaged in teaching and administrative positions in western Pennsylvania.

—Mr. C. H. Smith was elected superintendent of public instruction of DeSoto County, Florida, for the next four years, beginning with January first. Mr. Smith was appointed to fill the unexpired term of P. G. Shaver, who resigned on September first. Mr. Shaver has been elected as supervising principal of the Arcadia city schools for the term 1924-1925.

—Supt. S. O. Hartwell, of St. Paul, Minn., was the principal speaker at the dedication of the new Central High School at Kalamazoo, Mich. Mr. Hartwell was a former resident of Kalamazoo, having served fourteen years as principal of the high school, and twelve years as superintendent of schools. It was considered fitting and proper that he was privileged to take the leading part in dedicating the building he helped to plan.

—Shabbona, Ill. The school board has given permission for the occasional use of the community school building for other than strictly school purposes. A resident person or organization using the building for purposes of gain must pay a fee of $10. A non-resident person, or organization, using the building, must pay a fee equal to one-half of the door receipts.

To protect health in your washrooms, avoid the use of papers made from germ-laden refuse. All "National" Paper Products are made from new, clean spruce wood only. They are safe to use.
"NO WASTE" Toilet Tissue and "PUBLIC SERVICE" Towels protect health and save money in the washrooms of leading schools, office buildings, hotels, hospitals and public buildings throughout the United States.

Is Health Protected Economically In Your Washrooms?

Insanitary towels and toilet papers from unguarded sources breed contagion.

The surest *and most economical way* to avoid paper made from cast-off newspapers and germ-laden refuse is to use "NO WASTE" Toilet Tissue. Made from clean, fresh spruce wood only, under ideal sanitary conditions, "NO WASTE" Tissue has the obvious advantage of *known health protection.*

A special cabinet, which is leased without charge to large users, dispenses only one double sheet at a time, thus eliminating waste. And large production keeps the prices low. "NO WASTE" Tissue and "NO WASTE" Cabinets therefore provide the two most important factors in washroom control—*health protection and economy.*

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Ethics of Teacher Selection

E. J. Stout, Superintendent of Schools, Dunkerton, Iowa.

The question of ethics is one with which we have long been concerned, not in a very practical way, perhaps, but, nevertheless, in a way whereby we all have endeavored to meet the approval of what we termed standards. However, it is well that we hesitate just a minute here and define the word anew that we may have a common ground on which to work in the course of this paper. Very briefly, Webster tells us that "ethics" means "the science that treats of the principles of human morality and duty." In other words, ethics, as a term, treats of human relationships insofar as morals and duties are concerned. For the purpose of this discussion, I am chiefly concerned with the duties of these human relationships; for it is my conception that if the duties are well and carefully performed, we shall not err from the moral standpoint.

This study has been made with five important questions in mind. These have been: (a) Why should the superintendent be concerned about ethics when selecting teachers? (b) What effect does he have on the teacher ethically? (c) Does his place in the corps of teachers need to be controlled by ethics? (d) Are ethics and business related? (e) Have any agencies aided the problem thus far?

After a very careful study I have found that the superintendent is responsible for the professional status of the teacher; that the average superintendent can, to a degree, make his teachers satisfied or dissatisfied; that the superintendent should be recognized as a professional and ethical leader; that it should be a part of our professional ethics to be business-like in all things.

It develops, too, that in the consideration of the ethics applied to teacher selection that the relation of superintendent to superintendent may well be embodied. A questionnaire addressed to fifty of my contemporaries prompts me to summarize their conclusions as follows:

Superintendent to Superintendent

1. In his relation to his fellow superintendents, an ethical superintendent will follow "The Golden Rule." Each and every one should do to the other fellow just what he would wish that person to do to him.

2. A superintendent who endeavors to be ethical will determine what qualifications are to be desired before looking for teachers. He should not try to secure a teacher from another school simply because she is making good there.

3. Such a superintendent should never attempt to wean a teacher from another school unfairly. The only course would be to have the permission of the teacher's present superintendent, and know that she desires a change.

4. In his relation of superintendent to superintendent, the ethical one will be fair and honest in answering inquiries concerning teachers. In the past recommendations have been too freely given, so much so, in fact, that to many people they have come to mean but little. Full and candid information concerning the applicant should be given, yet it should be remembered that no unjust criticisms should ever be made concerning a candidate. Everyone should, at least, have pure professional interest in making recommendations.

5. The ethical superintendent will hire no one who is under contract, unless the superintendent and board where the teacher is employed assure him that she can be released. In case the applicant states that a contract has been signed, but a release can be obtained, get the written release before making appointment. Again, it seems very questionable to be offering these positions at late dates. Practically all codes of ethics frown on the idea of "contract breaking."

6. Each superintendent should observe all principles ordinarily recognized in contracts for services.

7. The superintendent who aims to be ethical will respect the confidence of a fellow executive when he reports on a teacher. A personal experience may help to illustrate. A few years ago the writer was an applicant for a position in a certain good school in Iowa. He sent a written application and names of references. It so happened that he failed to obtain the position, and, in time, received from the superintendent his letter of application and, in addition, the confidential recommendations of the people cited as references. It was an embarrassing situation for me, and a most unethical and unprofessional one for the retiring superintendent. He had broken the trust confided in him.

8. A superintendent who is looking for teachers will report only actual vacancies.

9. Before considering an applicant, ask from her present superintendent whether she has signified her intentions of remaining with him. However, it is, perhaps, questionable whether a superintendent can be held entirely responsible for all acts of the teacher.

10. Do not over-bid another superintendent for the services of a teacher, unless it is in an above-board fashion.

11. There should be no professional jealousies, no back-biting. Each superintendent should build up his teaching corps to the best of his ability through honest, consistent, ethical methods.

12. "Scouting" should be severely frowned on. If a promotion can be offered a teacher, it should be done through her superintendent and with his approval. The following is taken from the Proposed Code of Professional Ethics for Teachers of Wisconsin. " Article 20. It is unprofessional for a superintendent to visit with a view to employment, a candidate at work without the permission of his or her superintendent. Article 21. It is unprofessional for a superintendent to receive money for aid or services rendered to teachers in securing higher or better positions."

These twelve points constitute what I would call, from the ethical viewpoint, "The Foot Measure of a Superintendent." If they alone were followed, there would be little cause for complaint in Iowa, insofar as the ethical principles are involved.

Superintendent and Teacher

A series of expressions from fellow superintendents would warrant the following conclusions:

1. A superintendent shows ability as he selects teachers. He must select those who fit.

2. He has a professional responsibility to both the new and the old teachers. Naturally, there should be a large consideration for those of proved abilities. The sound superintendent will be fair, honest and impartial in his selection. He will not permit personal prejudice nor selfish interest to enter into the business. All things being equal, the old teacher is entitled to the position. However, the superintendent will be ambitious to have all of his teachers reach an adequate plane in educational qualifications. Much depends, also, on the personality, the character, the morals, the ideals, and the degree of professional interest of the teacher. "She must be solid and substantial in her conduct; not flighty and changeable, but dependable, a girl with Christian virtues."

3. A teacher who is being seriously considered by another school should not be subject to appointment.

4. The ethical superintendent will offer a teacher a fair salary. That salary is defined as one which is sufficient to cover living expenses for twelve months and provide for a yearly saving.

5. Discourage under-bidding. Most codes state that "it is unprofessional and unethical to under-bid a rival to secure a position." Superintendents can largely control this situation.

6. Investigate the applicant's record before hiring. Know what she can offer your school system before making appointment.

7. When a good teacher in a system is ready for promotion and is desirous to advance, she is entitled to every assistance from the superintendent. Again the Wisconsin Code: "It is unprofessional for a superintendent to refuse to aid a successful teacher to secure worthy promotion within his own or another school."

8. Give the teacher an idea of what is to be expected of her before employing her.

9. Let her know the standard by which her merits will be judged. As a rule such judgments are made through the results of the work done, through achievement tests, skill tests, and educational measurements.

10. Frankness with his teachers should be the first essential of every superintendent.

11. Ethical superintendents will discourage promiscuous applications. However, since teaching at the present time means short term office, it will be difficult to hold to any definite rule.

(Concluded on Page 134)

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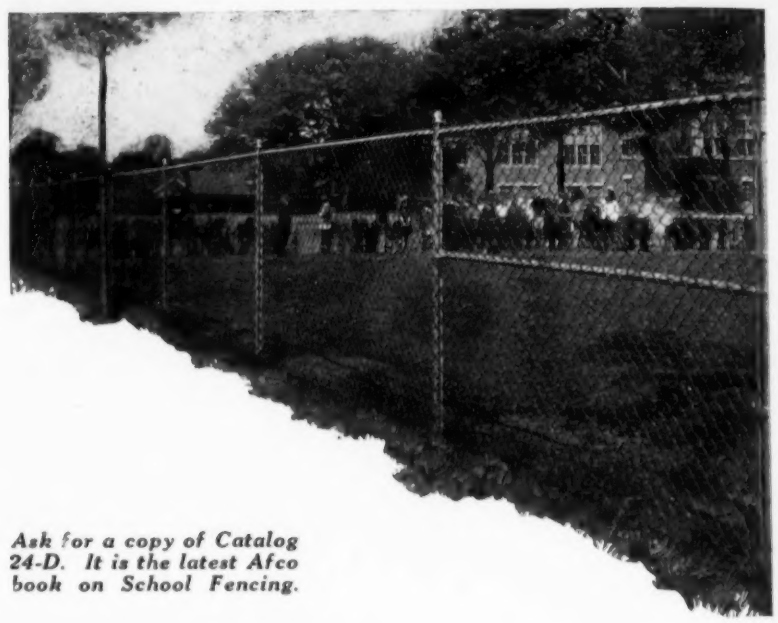

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(Concluded from Page 132)

12. Hire only those teachers who are in the habit of keeping their contracts. It is most unethical to break such and if teachers knew the result there would be more hesitancy on their part.

13. Let teachers know that frequent changes cause boards to believe there are many teachers available.

14. Choose those teachers who will be a credit to the profession. The ethical superintendent will not try to attract a teacher to his system unless the teacher and the profession will be benefitted. There should be a reward for preparation and qualifications, but none for personal preferences. The teacher should not be offered a new position unless it offers to her a greater opportunity, including a promotion to begin with, a chance for advancement and growth, as well as salary commensurate with the responsibilities placed upon her.

15. Only actual or prospective vacancies should be reported to teachers.

16. A superintendent should notify those teachers in his system who have failed of re-election. He should also give the causes.

17. He should not offer a teacher a position unless he knows that she desires a change and is free to accept.

18. No teacher who is unprofessional in any respect should be retained or passed on to some other system.

19. Any superintendent who urges violation of a contract is most unethical.

20. It is undignified and unprofessional for any teacher to succeed to a given position through handicapping the incumbent. Social, political, religious or denominational prejudices should never be aroused against an incumbent in order to place therein another teacher. When such methods are used the superintendent is more unethical than the teacher using those means.

Superintendent, Board and Community

The third group of replies received from fellow superintendents had direct relation of the superintendent to the board of education and the community in regard to ethical teacher selection and suggest the following:

1. The superintendent should see that the salary paid is not only fair to the teacher, but also to the community.

2. Personal favorites of board members have no more right to consideration as such than those of the superintendent. In the Wisconsin Code is found: "Obtaining and securing positions by fawning upon members of boards of education and others in authority, by courting their personal favor, will be regarded as undignified and unethical by respectable and self-respecting teachers. The election of teachers to office should be based upon merit." And all superintendents should see that teachers and communities get fair play in this regard.

3. If a local teacher should be employed, she should, all things being equal, receive the same pay and same privileges and emoluments as her sister from other territory.

4. Hire those who can aid the community. Don't just give some one a job.

5. Know what your community expects of its teachers; select that which is good for them to have, and then attempt to give them the best they desire in the best way.

6. With the welfare of the community in mind, the superintendent should demand leadership of the highest type. "The important thing is to get a real piece of humanity, genuine, honest, affable, cheerful; the real thing," says Supt. O. E. Smith.

7. Incumbents of positions should be re-elected to positions as soon after board organization in the spring as possible. This is only fair to the board and community as well as to the teacher.

Thus, we find that the problems of the ethical superintendent are large and many, but unfortunately common to all. The important thing is that we know the problems; we can then work out solutions of them as soon as possible.

AMONG BOARDS.

—The Akron school board and the contracting firm of Clemmer & Johnson have filed an appeal with the Supreme Court at Columbus, Ohio, from an injunction granted by the Summit County Court against the construction of the proposed Garfield high school. The defendant is Con Mulcahy, president of the Carmichael Construction Co., one of the unsuccessful bidders on the school.

The school board holds that the contract awarded to the Clemmer-Johnson Company is legal in every respect and that if the injunction stands, "no board of education will know how to proceed in the letting of contracts." The court has been asked to make a ruling that will establish definite rules of procedure for school boards.

—Philadelphia, Pa. The school board has denied a request for an increase in the salaries of teachers and clerks. The petition was the result of agitation on the part of teachers who objected to the alleged discrimination caused by the existence of a socalled privileged class. The board had previously refused to make any changes in the schedule to carry into effect the Edmonds act, under which the superior class was created.

—Highland Park, Mich. With the approval of the school board, Supt. T. J. Knapp has appointed a standing committee of six which is to handle all requests for permission to distribute advertising circulars in the schools, or to use the school organization to reach teachers and employees. The committee will furnish information and advice for teachers or employees seeking assistance in financial matters.

Another part of the committee's work will be the making of arrangements for meetings at which well-known speakers will discuss before special groups, problems of a general and specific financial character of interest to school employees.

The committee is headed by Mr. C. W. Mickens, principal of the Thomson School, and Mr. H. C. Daley, director of the survey department, acts as secretary. The committee has entered upon its work and problems referred to it will receive prompt and careful attention.

—Chicago, Ill. The school board has approved a resolution providing for the appointment of a $50-a-day attorney to look after the interests of the board in tax matters connected with the work of the board of review. The appointment carries with it the proviso that the appointee shall be continued in office until the president of the board deems it no longer necessary to employ him.

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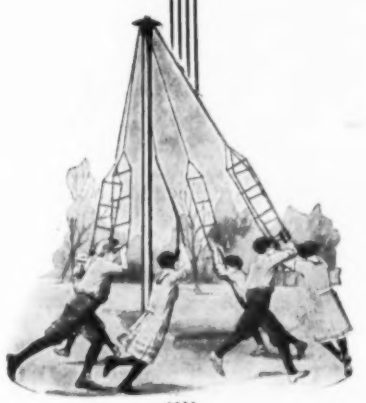

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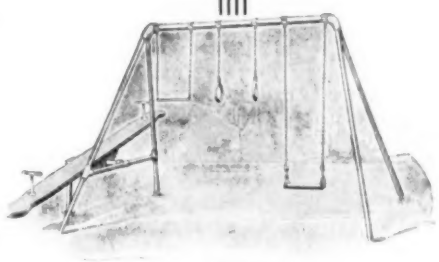

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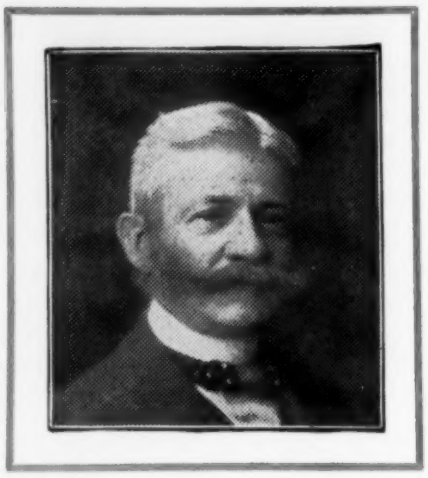

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SELLING THE COMMUNITY THE NEED FOR A BOND ISSUE

A statement signed by the president and the secretary of the Milwaukee board of education was recently presented to the common council and the people of Milwaukee asking for an appropriation of $700,000 for new school buildings. The statement contained in question-and-answer form, the complete information which the common council and interested citizens might desire to know: Why buildings are needed, what buildings are needed, whether the city can afford to pay for these buildings, and how the buildings are to be paid for?

The statement which is reproduced in full below, is suggestive for all school authorities who are confronted with a similar "selling" problem.

Ques.: **Does the board of school directors need the $700,000 it is asking the common council to appropriate?**

Ans.: **Yes. This amount is sadly needed.**

I. Money Available from Present Funds

1. Ques.: How much money does the board now have in the treasury and what is the amount of bonds unsold?

Ans.: Cash on hand September 2, 1924 ..... $1,440,447
Bonds voted but unsold.... 700,000

Total..... $2,140,447

2. Ques.: How much of this amount is available for additional building and purchase of sites?

Ans.: Available in cash and bonds. $2,140,447
Less contracts let and obligations to be met..... 1,870,505

Amount actually available.. $ 269,942

3. Ques.: How is the money reserved to pay contractors and other obligations to be met being spent?

Ans.: The amount due contractors when work under way is completed totals $1,523,505. The other $347,000 represents additional obligations that must be met during the year.

4. Ques.: How is the $1,523,505 being expended?

Ans.: The money which will be due contractors upon completion of the work is divided as follows:

Franklin Street School (balance due)	$ 122,128
Roosevelt Junior High.....	539,262
Sherman School	409,672
Boys' Technical High (Addition).....	125,882
Lapham Park Social Center.....	163,849
Service Building (balance due).....	63,142
Miscellaneous contracts for improvement of grounds, etc. (balance due).	49,570
Total.....	$1,523,505

5. Ques.: How will the $347,000 for other obligations be spent?

Ans.: The board will need for

Equipment of new schools.....	$ 40,000
Sites authorized to be purchased or in process of condemnation.....	260,000
Architectural salaries and office expenses	31,000
Inspectors' salaries	16,000
Total.....	$ 347,000

II. The Proposed Program for the Coming Year

6. Ques.: What buildings will be contracted for during the year if funds asked for are provided?

Ans.:

Oklahoma Addition	$ 240,000
Cass Street Addition.....	150,000
Kosciusko Pre-Vocational School.....	500,000
Neeskara Elementary School.....	400,000
Fond du Lac and Thirty-eighth Junior High and Elementary.....	650,000
Total.....	$1,940,000

7. Ques.: What other buildings would be built if sufficient funds were available?

Ans.: The following buildings are almost as urgently needed as those listed above:

Lincoln High Addition.....	$ 500,000
Relief for Cold Spring, Eighteenth Street, Twenty-seventh Street, and Clybourn Street Schools.....	600,000
Fernwood Elementary	320,000
Total.....	$1,420,000

8. Ques.: How much should be spent for additional sites if funds are available?

Ans.: $150,000.

9. Ques.: What changes will be made in the above program in case legal opposition to the "New Mexico" tract in which the Fond du Lac and Thirty-eighth Street site is located is not removed?

Ans.: Some other building almost as urgently needed will be substituted.

III. Organization for Carrying Out the Program

10. Ques.: Is the board in a position to spend this amount to good advantage during the coming year in addition to funds now on hand and available through bonds?

Ans.: Yes. Its architectural department is in a position to furnish plans for all buildings that these funds, as well as those received from aditional bonds and cash on hand will provide.

11. Ques.: What is the amount of the program handled by the architectural staff during the past year as indicated by contracts let?

Ans.: Contracts awarded for new construction and improvement of sites during the interval from September 4, 1923, to September 2, 1924, totaled slightly in excess of $2,000,000.

12. Ques.: How large a program is the architectural and business staff prepared to undertake for the coming year?

Ans.. As already indicated the total program for the past year amounted to more than $2,000,000. The architectural staff has been enlarged by the addition of a full-time architect and is capable of setting in motion an even larger program if necessary.

13. Ques.: Is the board apt to be delayed in the construction of any of the buildings planned on account of not being in possession of the necessary sites?

Ans.: No. The board already has the site in every case.

IV. Relation of request to present shortage and to the five-year building program

14. Ques.: What is the extent of the present building shortage?

Ans.: Approximately 100 barrack rooms are now in use, 90 of these are being used for elementary purposes and ten for high school purposes. Nearly 4,000 grade children alone are now attending school in barracks. Approximately 900 children are seated in assembly halls and basements. All I B grades are now on half-time. Another 1,500 sittings would be required if they were to be restored to full-time.

15. Ques.: Is the amount asked for now in keeping with the financial program recommended by the committee which prepared the five-year building program?

Ans.: Not entirely, but very nearly. The present request is for $1,000,000 in bonds and $700,000 by direct taxation. The recommendation of the committee called for $980,000 in bonds and $762,000 in direct taxes.

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Nocturne in E Flat (Chopin)	Samaroff	6269
Caprice (Ogarew)	Powell	806

One of these says "happy," one says "sad." Which?

Waltz in G Flat Major (Chopin)	Moiseivitch	55156
Death of Ase (Grieg)	Victor Orchestra	35470

One of these says "dance," another "gallop," another "march." Which?

Light Cavalry Overture (von Suppé)	Victor Orchestra	19080
War March of the Priests (Mendelssohn)	New York Orchestra	6464
Waltzing Doll (Poldini)	Powell	806

One of these says "elves," another "fairies." Which?

Golliwogg's Cake-Walk (Debussy)	Rachmaninoff	813
Scherzo—Midsummer-Night's Dream (Mendelssohn)	Philadelphia Orchestra	6238

Who can make up a story that seems to be suggested by either of these?

Funeral March of a Marionette (Gounod)	Victor Orchestra	35730
Ballet Music from Rosamunde (Schubert-Kreisler)	Kreisler	723

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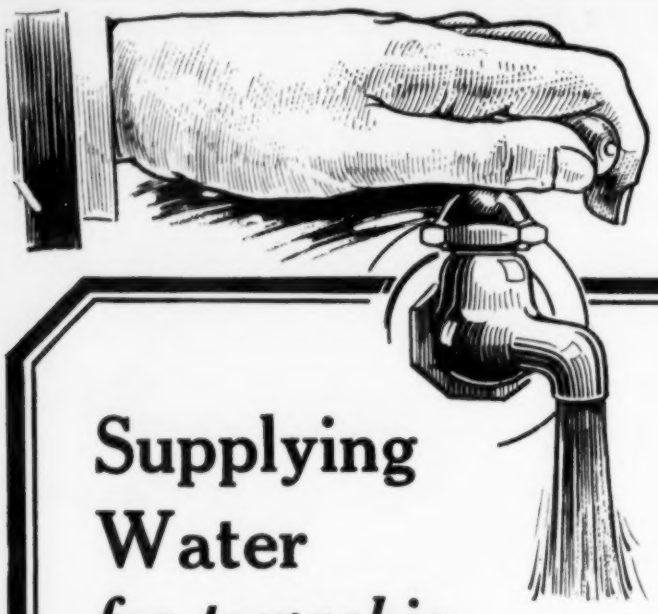

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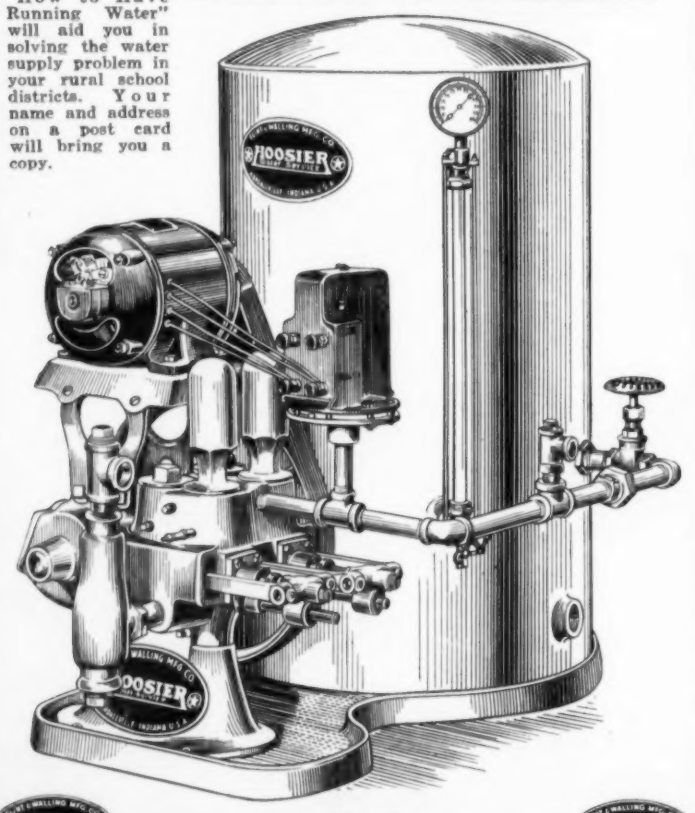

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TEACHERS AND ADMINISTRATION

—Supt. Frank Boynton of Ithaca, N. Y., in a recent address before the New York Council of Superintendents, denounced teachers as "bob-haired, carmine-lipped, cigaret-smoking, immodestly-clothed young man chasers." He said:

"We pay any of these college girls six dollars a day to begin teaching. If a girl is a Phi Beta Kappa student, she gets the job. That's all the employment bureau is interested in.

"We have too many would-be's in the schools, too many who are man chasers, and who wait to quit only until they have hooked some young man. I know, for I unloaded fifteen last year."

—Aberdeen, S. D., has for the first time adopted the health insurance plan for school teachers. Under the plan, all of the one hundred teachers are provided for. The teachers pay one-third of the annual premium of $20, and the school board the other two-thirds.

In case of illness, the teacher receives her salary and assigns her daily sick benefit of $5 a day to the school board for the first ten days. This pays the salary of the substitute. If the illness should continue longer than ten days, the insurance benefit is paid to the teacher and the board pays the substitute from other funds. The salary of the teacher is eliminated when the insurance benefit is in effect. In case of the death of the teacher, there is a provision that $1,000 shall be paid to the heirs of the deceased.

—Contracts drawn by school boards including provisions for terminating the contract of a teacher with or without cause, by giving a few days' notice, are not in legal form, according to a decision of Attorney General Dunbar of Washington.

Under the law, a teacher can be discharged only for cause, and he may have the legal remedy of appeal to determine the sufficiency of cause for dismissal, according to Mr. Dunbar.

—Bellingham, Wash. The school board has adopted a policy not to employ or re-employ married women with supporting husbands, or to give initial employment to women 40 or more years of age, or men of 50 years or older. The first rule becomes effective in May, 1926, and the second goes into effect immediately.

—The school board of Schenectady, N. Y., has refused to adopt the single salary schedule on the ground that it has too many faults to admit of a test. The board will adopt a new schedule in the near future, basing the salary maximums on the results of individual teachers.

—Chicago, Ill. The school board has been asked to restore a twenty-year rule requiring the superintendent to present to the board a written record of names of sponsors for promotion for transfer of principals, teachers or other employees. The purpose of the reintroduction of the rule is to obtain efficiency and some form of merit system in the promotion and transfer of teachers and employees.

—Trenton, N. J. The assistant commissioner of education of New Jersey has sustained the action of the board of education of Somers Point in terminating the services of Edna B. Scull, a teacher, on May 16th last. Miss Scull alleged the termination of her employment constituted an unlawful dismissal. She claimed she was entitled to be paid $130 for the month of May.

The commissioner held that the school board was entirely justified in basing its calculation of the proportion of the appellant's tenth salary installment due her, upon the monthly standard of twenty days, and that its payment of $39 for six days of service was correct.

—Hoboken, N. J. The school board recently dismissed a teacher because she was married but avoided legal complications by failing to mention the cause for dismissal. It is the policy of the board to appoint to permanent positions only teachers who have completed a year's probation. It is also the policy of the board not to continue married women as teachers. Instead of recommending the teacher to a permanent position, she was recommended for dismissal.

—According to the fiftieth annual report of the Brooklyn Teachers' Association 81 per cent of the absence of teachers from their work is due to four prevalent diseases. These are: Infections, which accounted for 27.97 per cent, diseases of the digestive system for 27.88 per cent, diseases of the respiratory system for 18.88 per cent, and diseases of the nervous system for 6.91 per cent of the cases. The remaining 18 per cent were scattered among several other classified diseases.

—The superintendents' council of New York state at its annual meeting condemned the equal pay plan now a law of the state. A warm discussion was precipitated when Superintendent Hodge of Yonkers asked Superintendent Boynton of Ithaca if there was any reason why a woman teacher doing the same work should not be paid the same salary as a man. There was none, replied Supt. Boynton, who then condemned the bob-haired, carmine-lipped, immodestly clothed college graduates being paid $6 a day as beginning teachers and who, being men-chasers, would quit teaching as soon as they "hooked some fellow." There could be equal pay only when men and women crossed the professional line and would remain in teaching.

—"The deplorable fact remains that many of our schools are still taught by persons whose academic and professional training is not sufficient to guarantee the type of education our children are entitled to receive," says the Alabama School Journal. Thereupon the Mobile, Ala., Register remarks: "An inefficient teacher is better than none at all, and even limited instruction is preferable to a closed schoolhouse, but no state can make proper educational progress that lacks competent school teachers. The percentage of incompetents in Alabama is said to be high, yet very little interest was aroused by the campaign undertaken to win a larger measure of state support for the normal schools. A good many Alabamians seem to hold the opinion that a normal school is more or less of an educational luxury, and they view the higher institutions of learning in much the same way. People of this sort think a common school education is good enough for anybody, but a good common school education cannot be obtained

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unless the schools are provided with an adequate number of capable teachers.

—The Missouri State Teachers' Association will have a headquarters building of its own to be erected at a cost of $40,000, three-quarters of which amount is now available. The city in which the building is to be located has not been chosen. St. Louis, Kansas City, Jefferson City, and Columbia are under consideration.

—Owing to a decided division of opinion on the subject, the New York State Teachers' Association refused to endorse the federal bill providing for a department of education and cabinet officer.

—One of the financial experts of the Chicago board of education has recommended the saving of a million dollars by increasing the elementary classroom membership from 42 to 48 members. In commenting upon this recommendation the Chicago Herald said: "As we have said again and again, we do not blame the board for scratching round in search of economies; very much the reverse! The situation is one which the board did not make, yet must meet. And neither do we think a teacher has any prescriptive right to his or her job. But the basic problem is not how to save money. It is how to get good teaching. We do not think that this present proposition contributes to the solution of the problem of good teaching."

—The Chicago board of education retires its female teachers at the age of 57. The Chicago Tribune in commenting on this system of retirement recently said: "At 57 many teachers can bring a wealth of experience and humanitarian knowledge to their classes that is invaluable. And that is about all the wealth that most teachers have. They live frugal lives. They can save little. Their service is great. They should be allowed to continue that service. The schools are fortunate in most cases to retain teachers of long experience. Not all teachers should be old teachers. Young minds need young companionships and sympathy. But the natural ratio of older teachers need not be diminished artificially. Young teachers who marry reduce the ratio quite enough."

—The New York City board of education has granted during the year 636 maternity absence leaves to women teachers.

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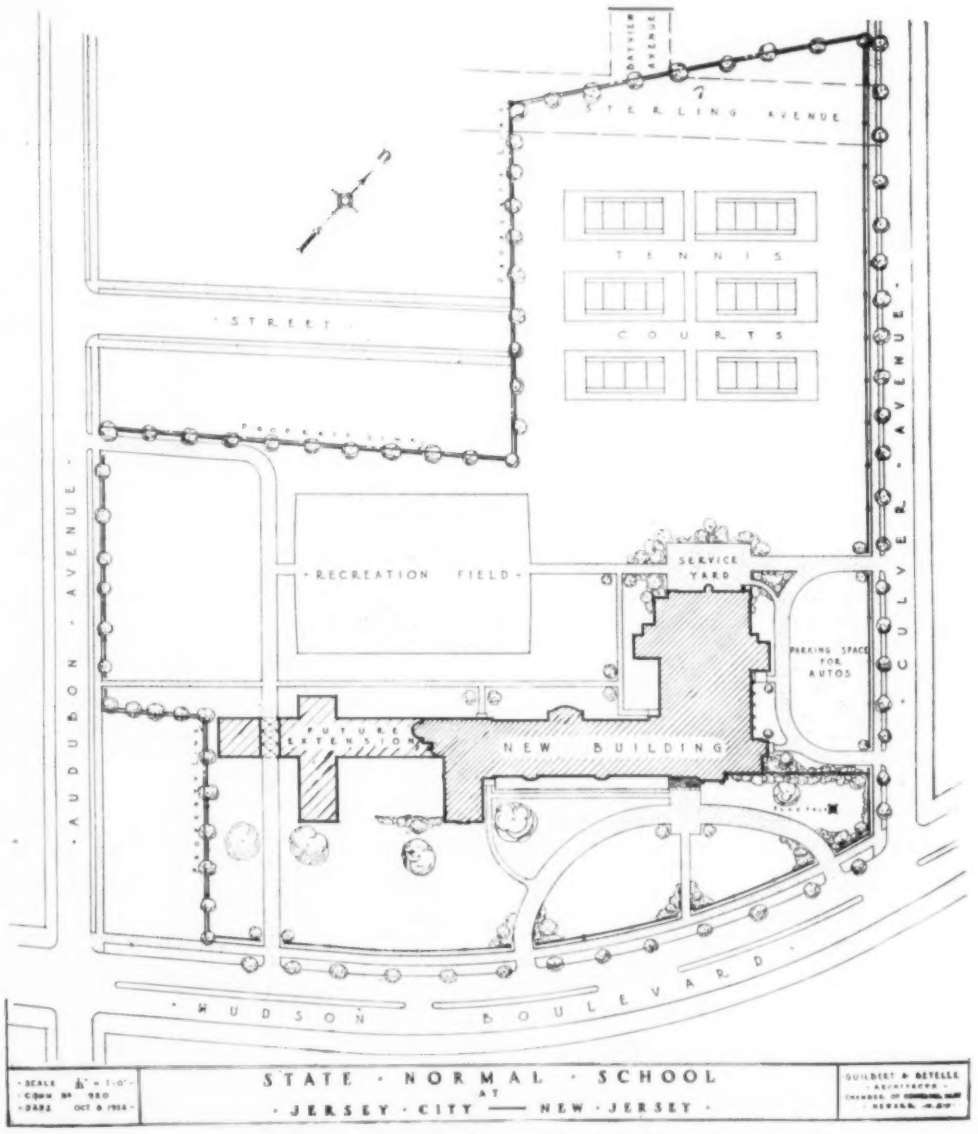
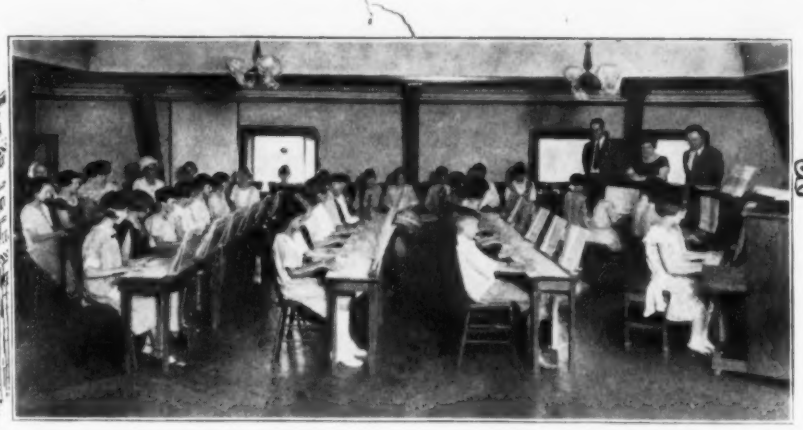


PLOT PLAN OF JERSEY CITY STATE NORMAL SCHOOL. (See Page 66.)



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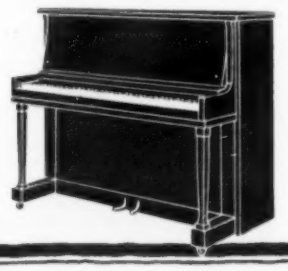

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(Concluded from Page 144)

—The most recent research bulletin of the National Education Association is devoted to Teachers' retirement allowances. It provides a fund of information for those interested in the subject.

—The first teachers' institute of the Virgin Islands was held on November 6th and 7th, in Frederiksted, St. Croix. On November 7th the Virgin Islands Education Association met at the same place, this being the first meeting of the organization. A great deal of interest was manifested by the teachers, as well as the general public, and plans were made for the future improvement of the profession in general. Ninety-seven per cent of all the teachers employed attended the institute and convention.

TEACHERS' SALARIES

—Providence, R. I. Beginning with October, the annual salaries for the following named positions were fixed as indicated and the incumbents of these positions were paid respectively the salaries specified: Superintendent of schools, $6,500; first assistant superintendent, $5,000; second assistant superintendent, $3,750; third assistant superintendent, $3,250; secretary of school committee, $5,100; purchasing agent, $3,000; director of kindergartens, $3,000; supervisor of primary schools, $3,000; supervisor of special schools, $3,000.

—The average salary paid rural white elementary teachers in North Carolina is $85.12 per month. In 56 counties the average salary is less than the rural school average for the state. In 86 counties the average is less than $93.27, which is the average paid all white elementary teachers, city and rural.

In 99 counties the average salary paid is less than $125, the average in all city schools, and in all counties it is less than $137, the average in the 24 largest city schools. Six counties paid average salaries in excess of $100 per month to rural elementary teachers, and thirteen counties paid less than $75 per month. New Hanover pays the highest average, $125, and employs teachers for its rural white schools with an additional year of scholastic training.

—Florence, Colo. A new salary schedule went into effect on September first. The schedule provides for a salary of $1,500 in the grades and $1,750 in the high school, which is based on tenure and training, summer school work, extension work, travel and reading. Teachers to be eligible for the salary in this schedule must possess an I. Q. of 100 or above, as indicated by a standard intelligence test.

—Utica, N. Y. The school board has adopted a new salary schedule for teachers. Under this schedule, grade teachers will be given a minimum of $1,100, and annual increases up to the maximum of $1,700. Special teachers will be given $1,750 and manual training teachers $2,300 each. Principals are given salaries ranging from $2,100 to $3,100, depending on the size and character of the school.

—Washington, D. C. A new salary schedule has been announced for the teachers and officers of the public schools which compares favorably with the salaries paid in cities of more than 100,000 population. The schedule not only represents a real advance over the inadequate schedule of the past, but it carries important legislation looking toward an improved organization of the school system. The schedule is as follows:

	Min.	Max.
Kindergarten and elementary teachers:		
Group A	$1,400	$2,200
Group B	2,300	2,600
Junior High School teachers—Elementary school qualifications:		
Group A	1,600	2,400
Group B	2,500	2,800
High school qualifications:		
Group A	1,300	2,800
Group B	2,900	3,200
Normal and Senior High School teachers:		
Group A	1,800	2,800
Group B	2,900	3,200
School librarians:		
Group A	1,400	2,200
Group B	2,300	2,600
Teaching principals:		
4 to 7 rooms	2,300	2,600
8 to 16 rooms	2,500	2,800
Administrative principals, 10 rooms or more, and principals of vocational and Americanization schools	2,900	3,200
Junior high school principals	3,500	4,000
Senior high and normal school principals	4,000	4,500
Directors	3,200	3,500
Heads of departments and assistant principals of high schools	3,200	3,700
Supervising principals	4,000	4,500
Board of examiners, white schools—		
Chief examiner	4,000	4,500
Assistant superintendents	4,200	4,700
First assistant superintendents	5,000	6,000
Superintendent of schools	8,000	10,000

—Teachers' salaries in Illinois increased slightly in the school year 1923-1924 over the year preceding, according to figures compiled by the state department of education. The increase for men teachers exceeded that for women, the former increasing on an average of about $73 or a 5.9 per cent increase, while the latter increased about $22 or 2.4 per cent.

In several counties, a marked decrease occurred. Men were reduced 34 per cent in one county, while in another county women were reduced 39 per cent and the men were raised six per cent. The largest increase was in Johnson County, where women teachers were raised 39 per cent and men 21 per cent.

The average salary for women during 1923-1924 for the entire 26 counties was $1,375, while that for women amounted to $920. Will County paid the highest salaries to men teachers, outside of Cook County, while Lake County exceeded all others but Cook in the average paid to women teachers. There are nearly five times as many women as men teachers in the state.

Citizens of Syracuse, N. Y., have petitioned the board to fulfill the spirit instead of the letter of the equal pay law, and to increase the salaries of women teachers to the level of men teachers. The board had proposed reducing the men teachers' salaries to bring about the equalization demanded by the law.

—St. Louis, Mo. A movement has been started for a retirement system, providing for a substantial annuity fund for those grown old in the service of the schools. There are 29 teachers in St. Louis schools who have given more than fifty years of service, 87 who have given 45 years or more, and 232 who have taught more than 35 years.

—Newark, N. J. The school board has been asked to approve a resolution providing for increases in the maximum salary of principals of junior high schools and elementary schools with fourteen or more classes, and also principals of senior high schools. The proposed increases would bring the maximum for junior high school principals to $5,200, for elementary principals to $5,000, and for senior high school principals to $6,500.

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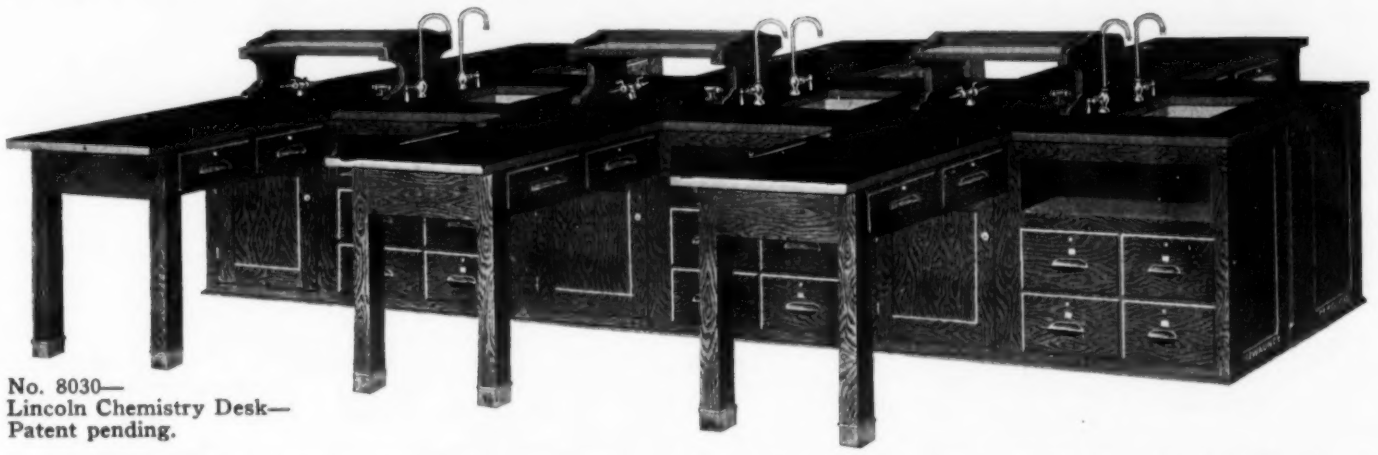

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AMONG SUPERINTENDENTS

—Memorial services were held in honor of the late Alexander T. Stuart, former superintendent of the Washington, D. C., schools. Those who eulogized Mr. Stuart at the Central exercises were James T. Lloyd, president of the board of education; Dr. Frank W. Ballou, superintendent of schools; Henry P. Blair, former president of the school board; Stephen E. Kramer, principal of Central High School; William T. Galliher, also a former president of the board, and Miss Alberta Walker. At the Dunbar High School J. C. Nalle presided. Dr. Winfield S. Montgomery, whose career in the schools paralleled that of Mr. Stuart, delivered the principal tribute. Others who paid tribute were Garnet C. Wilkinson, assistant superintendent in charge of colored schools; Dr. J. Hayden Johnson, member of the board of education, and Mrs. R. S. Netherland, whose topic was "Mr. A. T. Stuart, the Teachers' Friend." The Rev. F. I. A. Bennett, member of the board of education, pronounced the invocation and benediction.

—Miss Mary Trumper was reelected state superintendent of Montana by a handsome majority. Her administrative organization will consist of Mina Petrashek, deputy; Carl A. Jessen, high school supervisor; Rose K. Brandt, rural school supervisor; Jessie L. Duboc, rural school supervisor, and Nellie Johonnott, certification clerk.

—J. H. Burnett, who assumed the superintendency of McAllen, Texas, schools last June at a salary of $3,300, has just recently received the A. M. degree conferred upon him by the University of Texas. McAllen lies in the Rio Grande valley, has a population of 7,000, employs 38 teachers, and has 1,600 pupils.

—Clarence E. Meleney, retired associate superintendent of New York City is now serving as superintendent at Great Neck, L. I. This post is one of five new superintendencies recently established in villages of the State. The other Superintendents are: Bronxville, A. J. Stoddard; Mineola, Harlan B. Allen; Scarsdale, Ralph I. Underhill; Northport, M. D. Losey.

—In discussing school publicity as expressed through education week Public Service of New York City says, "Beating tom-toms does not always arouse enthusiasm in others or carry conviction. Evading citizens' questions and smothering their criticisms undermines confidence, weakens support, and galvanizes opposition. Specific publicity pays best. Rhetoric pays worst. Hitting a local nail on the head is good education. Uninformed publics are fickle publics. "Hoorah" is not of itself information. Suppression of criticism means fermentation and spread of criticism. To invite frank question and criticism for the purpose of using them may bring very helpful information and suggestion, and is bound to increase and intensify cooperation.

—Uniform textbooks for the state of Washington and Yakima County, the power of school trustees to levy fifteen instead of ten mills for school purposes, and the extension of authority for establishing schools for defectives, were recently approved by the executive committee of the Yakima County School Director's Association, at a meeting held in Yakima.

—The Alabama Educational Association has opened an office in Montgomery with the idea of disseminating information about the needs of education in the state. The office will act as a clearing house for information desired by individuals and will stress methods of publicity for educational systems.

—The school board of Springfield, Ill., has ordered that a building adapted to the needs of crippled children be erected on the grounds of the high school field. About twelve children will be admitted to the school which is being sponsored by the Crippled Children's Society.

—The Nevada Educational Association, at its meeting held in Elko, adopted a legislative program for the year 1925, which proposes a num-

(Concluded on Page 147)

INDUSTRY HIGH SCHOOL, STARK COUNTY, CANTON, OHIO.

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No school is too large and few are too small to provide adequate feeding facilities for students. The appropriation for equipment need not be extensive—the space devoted to the cafeteria need not be too large. Our Engineers will gladly plan with you for the most economical and satisfactory type of equipment—relieving you of all technical details and assuring an efficiently operating cafeteria. Tell us your requirements and we will gladly prepare the necessary plans—entirely without obligation. Meanwhile, if you are considering a cafeteria, write for Book Y93 of School Cafeteria Installations.

EDUCATORS newly faced with the problem of providing adequate feeding facilities for students may well be puzzled. The questions involved, at once foreign and technical, prove bewildering. Yet there is in this as in most other problems a standard and a gauge. The wisest course is charted by experience. And here vicarious experience—that of other schools—will be of help. In this connection it is interesting to note that PIX Cafeteria Equipment has been the choice of more schools than equipment of any other type or manufacture. It is to be found in schools of every size, every type and every grade throughout the country. If you inquire of any users, you will find how fully it has fulfilled its promise and served its purpose—faithfully, efficiently, and with economy. Our Engineers will gladly assist you in making your plans.

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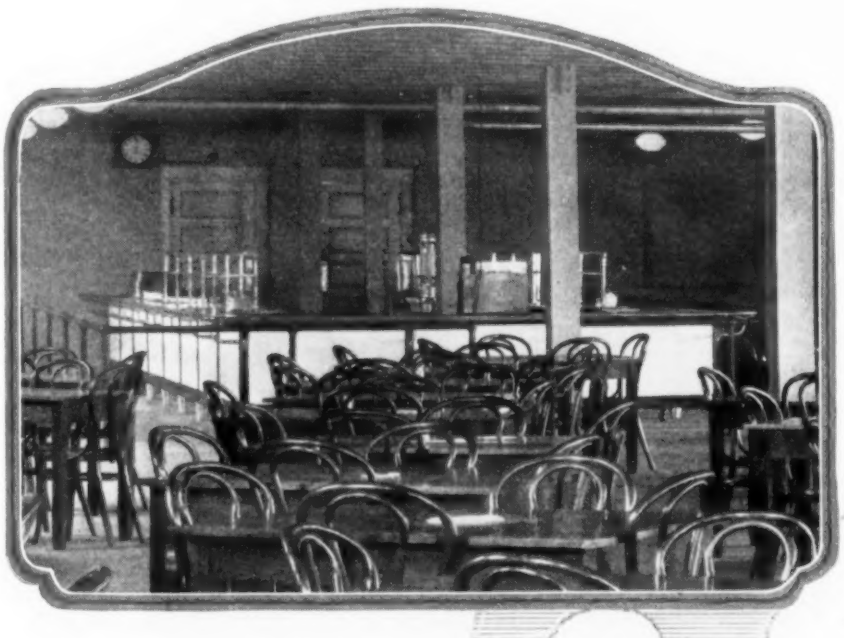

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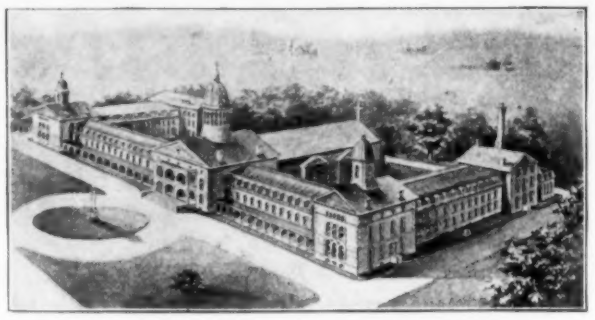

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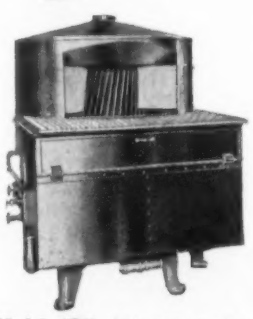

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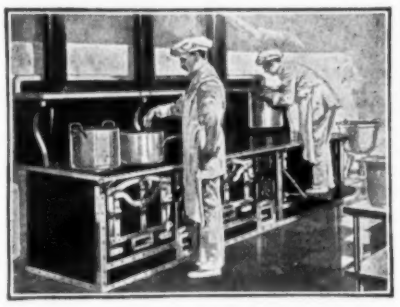

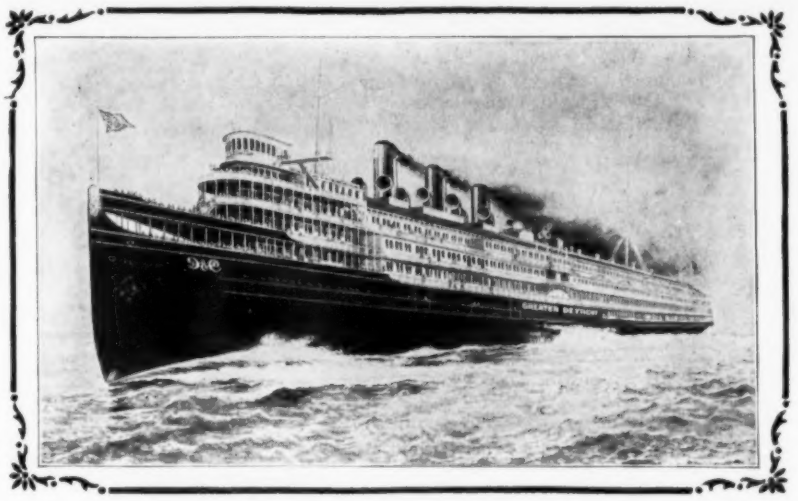

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CHICAGO BUFFALO LOUISVILLE ATLANTA KANSAS CITY DETROIT CLEVELAND PITTSBURGH NEW ORLEANS MUSKOGEE

(Concluded from Page 144)

ber of changes and improvements in the administration of the schools. Among the proposed changes are the following:

1. That the legislature be asked to provide for the joining of city, town, or consolidated and county high school districts.

2. That the salary of the state superintendent of instruction be raised to $6,000 per year.

3. That amendment three be held in abeyance until other and more adequate financial support is guaranteed to the schools of the state.

4. That the state board of education be given power to appoint district superintendents, and to fix their term of office, duties, and compensation.

5. That a tenure-of-office law be enacted, providing that a teacher be automatically re-elected unless notified to the contrary by the board of school directors in May.

6. That the apportionment of school moneys be made on a basis of the average daily attendance of the previous school year.

7. That a law be passed giving the deputy superintendent power to remove from office such trustee as he has appointed.

8. That a law be passed prohibiting districts employing less than ten teachers from paying for transportation of pupils without the consent of the deputy superintendent.

—Canon City, Colo. The business department is operating on the budget plan. It is the constant aim of the department to keep the budget safe and sane, and to this end, efficiency must be maintained without wastefulness.

—The school board of Utica, N. Y., has adopted its school budget for the year 1925. The total budget for the year amounts to $1,314,385, which is an increase of $53,660 over that of last year. The estimated revenue of the schools is $241,610, and the amount to be raised by taxation is $1,072,775.

—Painesville, O. The public schools will be forced to close April 24th next, unless financial aid is given. The early closing is due to the financial situation of the schools and will deprive pupils of six weeks' schooling. It is pointed out that all of the available money for school expenses is gone and that the board faces the problem of securing money to meet the payroll.

—School districts of Ohio without sufficient funds to operate the entire year are to be aided through a ruling of Attorney General Crabbe, in which he holds that districts voting the additional three-mill levy may participate in the state equalization fund for the fiscal year beginning in February.

—At the recent meeting of the Illinois Valley Division of the State Teachers' Association, held in Streator, the sum of $300 was appropriated for some line of cooperative work among the schools of the five counties of the division. The plan calls for the assignment of several educational specialists from the state or other universities, to conduct investigations of the work in this section. The work accomplished is to be reported and its results discussed at the next annual meeting of the association.

PROGRESS OF BUILDING PROGRAM
ST. PAUL PUBLIC SCHOOLS

HOW ST. PAUL SCHOOL AUTHORITIES CHART PROGRESS IN SCHOOL BUILDING CONSTRUCTION.

—The elementary schools of Streator, Ill., have this year employed a supervisor of primary grades and testing. The testing work includes intelligence tests of children entering the first grade, with a view of dividing classes into strong and weak pupils. Emphasis is placed on diagnostic tests with a view of remedial work for individual children in need of special attention. For the present the work covers the subjects of arithmetic, reading and language.

—New York, N. Y. Supt. O'Shea recently issued rules to guard teachers and pupils against accidents in new buildings which have not been fully completed and in which work is still going on. He says:

"It is sometimes necessary to have work done in school buildings after the term opens, but the paramount consideration should be the safety of teachers and pupils.

"If the work consists of the installing of electrical fixtures, blackboards, etc., in classrooms, the workmen should be restricted to definitely assigned rooms, and pupils and teachers should be removed from these rooms, even if temporary double sessions become necessary. Halls and stairway lines and other means of exit should be kept free and clear.

"Rubbish and inflammable material of any kind should not be permitted to remain on any part of the premises. Scaffolding should not be allowed to remain hanging unless absolutely necessary. If necessary, great care should be exercised to see that pupils do not pass under the scaffolding.

"While it may be desirable at times to permit men to work during school hours, the principal should exercise his or her own judgment in the matter, and always state definitely and clearly just what parts of the building the men may work in. If the principal is in doubt, he should consult the district superintendent or the superintendent of school buildings."

Manufacturers' Service Available in School Planning and Equipment

New products are constantly being placed on the market and improvements are continually being made in those already in use. The co-operative service now being offered by progressive manufacturers is an important factor in the successful planning and equipment of schools. For this reason a careful study of the service available, as outlined below, will prove of interest and value to school officials and architects.

A-B STOVE CO., Battle Creek, Mich., manufacturers of A-B Gas Ranges. Model installations of modern classroom equipment for domestic science instruction is shown in the book of plans published by this company. This is a 32-page booklet containing blueprints of model classrooms showing actual photographs and installations of domestic science rooms of well known schools in various parts of the country. The latest and most improved developments in the grouping and arrangement of equipment are shown. This book represents a complete, authentic and up-to-date reference manual that will prove a valuable aid in designing, building remodeling or re-arranging domestic science classrooms. A copy will be sent on request.

THE AIR CONDITIONING & ENGINEERING CO., 2914 S. Jefferson St.. St. Louis Mo., manufacturers of Ozone Generators and Electrozone Air Conditioning Apparatus. Complete information covering the use of Ozone in air conditioning as well as its actual use in schools is included in the following pamphlets and data issued by this company.

"An Advance in Air Condition in School Buildings."

"Ventilation and Fuel Conservation by the Electrozone Process."

"Reducing Small Town School Ventilating Cost."

This pamphlet gives comparative figures on ventilating cost and discusses methods of reducing same.

"Comparative Cost of Heating & Ventilating Systems."

This pamplet includes cost of operation and installation of various heating and ventilating systems for school buildings compared on a cubic foot basis.

"The Value of Ozone in Schoolhouse Ventilation."

"Mountain Fresh Air in the Mullanphy School."

This deals with tests made by the American Society of Heating & Ventilating Engineers on recirculated air with Ozone and all outside air.

"The O'Fallon, Another Fresh Air School."

This deals with the installation of Electrozone System of Ventilation in St. Louis schools.

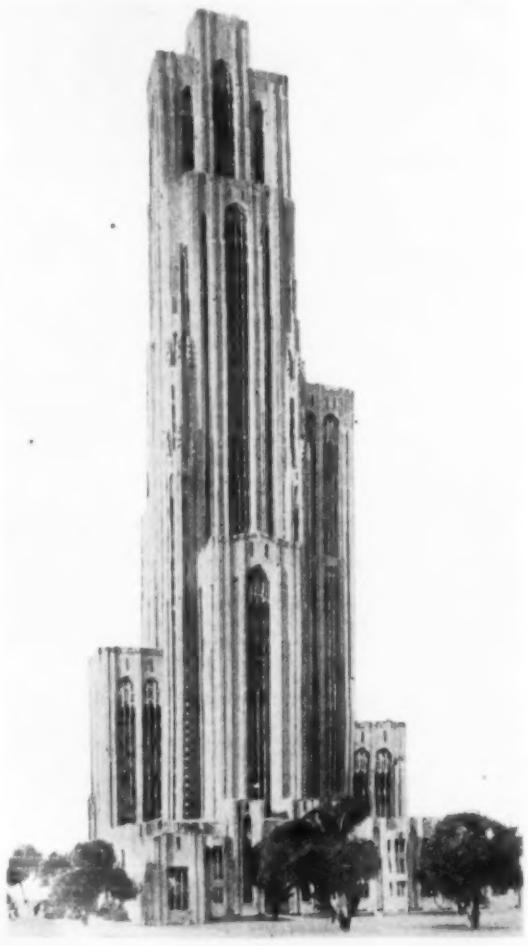
AMERICAN BLOWER COMPANY, Detroit, Mich., manufacturers of ventilating equipment, fans, air purifying apparatus. "Three Questions Concerning School Ventilation" is the title of a comprehensive booklet covering the various phases of providing proper ventilation in the schoolroom. The first chapter of this booklet "What Is Ventilation" contains an extensive analysis of this subject. "How Is It Determined" outlines the various methods and tests necessary to determine that the ventilation of a given room provides the highest degree of health to the occupants, in other words, a means of determining the ventilation of a given room. The last chapter on "What Is The Best System" discusses the equipment and apparatus essential to provide effective schoolroom ventilation. This is a 44-page booklet fully illustrated and containing a wealth of information on the subject of school ventilation. "Ventilating the School Room" and "ABC Air Washing and Cooling Fan" are the titles of other pamphlets also issued by this company.

ANCHOR POST IRON WORKS. Garwood, N. J., manufacturers of wire fences. "Fences, Gates and Railings" is the title of a manual containing complete data on the fencing in of property published by this company. In this catalog each of the several types of fences manufactured by this company are treated in a group of four pages; the first page giving photographs and suggested architect's specification clauses. The other pages contain detailed drawings, tables of dimensions. etc. This catalog is designed for the use of architects, engineers and school officials. It is 8½ x 11 in size, convenient for filing and for quick reference.

ATHEY COMPANY, 6035 W. 65th St., Chicago, Ill., manufacturers of the Athey- Perennial Window Shade and Athey Cloth-Lined Metal Weather-Strip. Athey-Perennial Window Shades are fully described in a series of bulletins published by this company. A series of sketches illustrate the adaptability of this shade in covering every kind of window opening. Athey Cloth-Lined Metal Weather-Strip is described in a pamphlet outlining the advantages of a weather strip of this construction as well as statistics showing the coal saving features. A Service Department is maintained and with representatives throughout the country this company offers a special service to school officials and architects in the specification and installation of their products.

BAYLEY MFG. COMPANY, Milwaukee, Wis., manufacturers of Fan System Heating and Ventilating Equipment—Heating Ventilating and Drying Engineers. Catalog No. 26 published by this company gives complete information covering the Bayley Plexiform Fan. The particular features embodied in the construction of Plexiform Fans as well as the advantages of Plexiform construction is fully described and illustrated. In addition, detailed information is included as to sizes, capacities, etc., and all the engineering data necessary to adapt Plexiform Fans to any heat distribution or ventilation problem. The Bayley Turbo Atomizer and the Bailey Air Conditioner are fully described in Bulletin No. 25. Data and specification forms are included. Bulletin No. 24 contains a complete description of Bayley Chinook Heaters covering the construction, operation and application with illustrations of typical installations and tables, diagrams and methods of calculation. Bayley Engineering Service offers a valuable aid to engineers and architects in determining the requirements and in meeting the heating and ventilating need of any type of building.

BRADLEY WASHFOUNTAIN COMPANY, Milwaukee, Wis. This specially designed Washfountain is described in a booklet published by this company under the title of "Evidence." Typical installations are shown of the Bradley Washfountain suggesting the advantages of this Washfountain and showing the economy in space as well as the utility of this type of Washfountain. Evidence of the service rendered is furnished by the series of letters from users.



THE PROJECTED "SKYSCRAPER" BUILDING FOR THE UNIVERSITY OF PITTSBURGH.

CIRCLE A PRODUCTS CORP., Champaign, Ill., manufacturers of Circle A Portable Schools and Circle A Bleachers. The Circle A catalog is published directly for the benefit of the school boards having housing problems to meet. The construction, utility and service of Circle A Schools as well as complete specifications for one and two room schools is fully described and illustrated in this booklet. Circle A Bleachers provide a portable bleacher not only to take care of the crowds at the regular athletic fields, but to provide bleacher space due to their portability practically anywhere. These Circle A Bleachers are interestingly described in a pamphlet published by this company.

CYCLONE FENCE COMPANY, Waukegan, Ill., manufacturers of the Cyclone Property Protection Fence. Catalog No. 16 includes information and specifications covering the various types of fences manufactured by this company. Detailed drawings illustrate the construction and show the method of installation. The iron fences also manufactured by this company are illustrated in the catalog. Tennis court enclosures, back stops, interior wire partitions, window and skylight guards, the catch-all basket are shown in this catalog. Through the Cyclone Fence service this company offers an engineering and installation service to assist school officials and architects in solving any fencing problem.

THE DOW COMPANY. Louisville, Ky., manufacturers of Spiral Fire Escapes. General Description, Architectural Advantages as well as Special Advantages of the Dow Fire Escape are contained in an interesting pamphlet published by this company. Specifications covering the Dow Fire Escape are also included and drawings showing the manner in which the Dow Escape can be placed on the outside or within the interior walls of the building.

DURABILT STEEL LOCKER CO., Aurora, Ill., manufacturers of lockers and cabinets. This company has compiled a standard locker specification sheet as an aid to school boards and architects in the purchase of steel lockers. Copies will be sent on request.

THE DURAFLEX COMPANY, Baltimore, Md., manufacturers of the Duraflex-A Flooring. The experience of The Duraflex Company in providing floors to meet the requirements of a modern school building indicate that the properties demanded of a school floor given in the order of their importance are as follows:

1. Durability.
2. Maintenance.
3. Sanitation.
4. Ease of Repair.
5. Continuous Availability.
6. Noiselessness.
7. Appearance.
8. Comfort.
9. Acid and Alkali Resistance.

In cooperating with school officials and school architects in solving the flooring problem the Duraflex Company have issued a series of publications as follows:

1. Descriptive booklet or treatise on Duraflex Flooring.
2. Specifications for the preparation of the underfloor.
3. Partial list of installations.
4. Acoustical Report made by the Massachusetts Institute of Technology comparing linoleum and Duraflex.
5. Important installations in schools as well as in office buildnigs.

FEDERAL TELEPHONE MFG. CORP., Buffalo, N. Y. Catalog No. 1100 describes their telephone systems for every type of service of particular interest to schools. It contains information in intercommunicating telephone systems and private branch exchanges. Complete specifications are included covering each system furnishing a valuable reference for architects and school officials covering telephone requirements. Wiring data for general lighting and power work is contained in this catalog.

HEALY-RUFF CO., Plymouth Bldg., Minneapolis, Minn., manufacturers of the E-Z Radiator Hangers. The architect's folder published by this company contains practical information and specifications covering the service and installation of E-Z Radiator Hangers. E-Z Radiator Hangers furnish a practical means of hanging radiators from the wall.

KEWANEE BOILER CO., Kewanee. Ill. The products of the Kewaunee Boiler Company are completely and fully described in a series of catalogs as follows:

Catalog No. 75 describes Kawanee Water Heating, Garbage Burners, Tobasco Water Heaters and Tanks. This catalog is fully illustrated together with complete data and specifications.

(Continued on Page 151)

Look for the "Raised-Rim" Top

Sani-Onyx — Sani-Metal

for Beauty — Sanitation — Permanence

MANY institutions, realizing the necessity of a cafeteria, have made the unfortunate mistake of purchasing and installing temporary food and drink equipment. Failure to investigate *permanent* equipment that does not require constant repairing and refinishing, has cost many institutions the price of a good, substantial installation.

The Sani Products Company have set the pace for substantial, permanent and sanitary equipment — the kind that will look just as well ten years later as the day it was installed. Snow white ***Sani-Onyx*** table tops are not spotted or stained by fruit juices or other liquids. Simply wiping with a damp cloth, keeps them clean and inviting. ***Sani-Onyx*** table tops have a *"raised-rim"* (an exclusive patented feature) which prevents spilled liquids from dripping on the floor or clothing.

We have solved the problem of refinishing and replacing wood table bases by furnishing ***Sani-Metal*** Porcelain Enamel. You need not worry about injuring this sturdy material with wet brooms and mops. ***Sani-Metal*** bases can be secured in white, brown, mahogany and grey color. It will pay you to install permanent equipment.

Write to the nearest fixture supply house or this office for catalog and full information on the ***Sani*** line of food and drink equipment. Send a diagram of your floor space and we will make a blue print lay-out of a complete installation free of charge.

Sani Products Co.

300 Sani Building — North Chicago, Illinois

Canadian Factory: 284 St. Helens Ave., Toronto, Canada

Selling Organization for Marietta Manufacturing Co. and Chicago Hardware Foundry Co.

Clear Vision Oven Door Invaluable to Pupils

Next to the positive regulation and control of oven heat, there is probably no single feature of modern gas range equipment that commends itself so strongly for classroom work as the clear glass oven door of the Model 38 A-B Gas Range. It enables the pupil to observe the progress of baking or cooking in the oven without the necessity of opening the oven door. This advantage is further facilitated by the electric oven light which completely illuminates the interior of the oven and which is another invaluable feature obtainable only in the A-B Gas Range.

Write today for free copy of PLANS. It is a remarkable book of suggestions that should be in the hands of every one interested in the proper planning and equipment of Domestic Science Classrooms.

A. B. STOVE COMPANY,
Battle Creek, Michigan
World's Largest Exclusive Manufacturer of Gas Ranges
Factories at Battle Creek, Mich., and Los Angeles, Calif.

A-B Gas Ranges
"Recognized Everywhere As America's Best"

CHRISTIANSEN'S TIME TESTED SCHOOL FURNITURE

Double Manual Training Bench
No. 22

Can also be furnished with four or two drawers, or without drawers.

When in the market for Manual Training Benches, Domestic Science Tables, Sewing Tables, Drawing Tables, Vises, Hand Screws, etc., write to

C. CHRISTIANSEN
Manufacturer of this line since 1898
2814 West 26th St., Chicago, Ill.

SHELDON SCIENCE LABORATORY, HOME ECONOMICS AND VOCATIONAL FURNITURE

For Complete Information Fill Out the Coupon Below!

E. H. SHELDON & CO.,
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Kindly send full information concerning furniture for the departments checked:

☐ Chemistry	☐ General Science	☐ Manual Training
☐ Physics	☐ Domestic Science	☐ Mechanical Drawing
☐ Biology	☐ Sewing	☐ Art
☐ Agriculture		☐ Commercial

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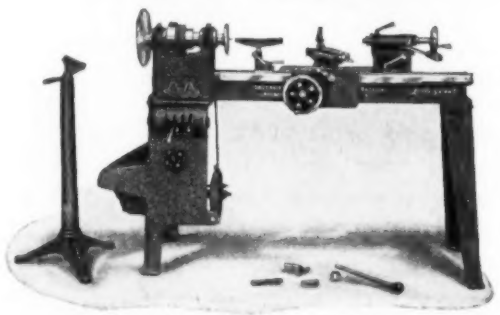
This Lathe—



218 ALL-PURPOSE LATHE

was designed to fill the special needs of school shops. Safety, simplicity, ease of operation and economical supervision requirements were kept uppermost in mind.

We feel confident that we have here an all-purpose lathe of which any school might well be proud.

SEND FOR BULLETIN NO. 104

GREENFIELD TAP AND DIE CORPORATION
GREENFIELD, MASSACHUSETTS

School Representatives

R. A. FIFE CORPORATION, Mamaroneck, New York

LB

L. B. Unit book shelving is constructed with non-warping shelves and uprights—rigid, non-rocking shelves. Shelves and uprights have surplus strength, without wasting book space. Standard unit sections are illustrated at the right.

L. B. Unit wood book shelving is built in sections 3 feet wide; in two heights 5 feet ½ inch or 6 feet 10 inches. It is single or double faced with shelves 8, 10 or 12 inches deep. Shelves are adjustable on 1 inch centers, and are interchangeable throughout.

Planning today that saves tomorrow

The library in your school is bound to grow. As new books are acquired, you will add to and rearrange your book shelves.

To make such alterations with built-in shelves is a costly nuisance. You can avoid this trouble and expense by insisting on L. B. Unit wood book shelving. This adaptable shelving is built on the unit principle.

As conditions require, you can add new sections or rearrange your present ones—in a few hours' time—without skilled labor, without noise or nuisance.

Over 47 years' experience in thousands of libraries has qualified Library Bureau to give authoritative assistance on any school library problem. One of our specialists will gladly discuss your problems without obligation to you.

Address the nearest library division listed below for free copy of our new booklet "School Libraries".

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Library Bureau

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Boston 89 Federal St. | Chicago 214 W. Monroe St. | New York 380 Broadway | San Francisco F. W. Wentworth & Co. 39 Second St. | Los Angeles F. W. Wentworth & Co. 440 Pacific Electric Bldg.

Salesrooms in leading cities in the United States, Great Britain and France

Standard L.B. school library equipment in quartered oak

Card catalog cases
Charging desks
Reading tables and chairs
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Vertical units for pamphlets, clippings and picture files
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Exhibition cases
Bulletin boards
Lantern slide cases

School library supplies

Administrative school records and files for superintendents, principals, department heads, secretaries, etc.

LIBRARY BUREAU
Cambridge, Mass.

Please send me book No. 814, entitled "School Libraries".

Name .....
School .....
Address .....

A. S. B. J. 1-25

(Continued from Page 148)

Catalog No. 77 covers Kewanee Radiators. A complete line of Kewanee Radiators is illustrated together with data and specifications.

Catalog No. 78 describes the Kewanee Firebox Boilers. Complete information is included showing the construction, equipment and method of installation of the different types of Kewanee Boilers. Catalog No. 79 covers Kewanee Power Boilers. Kawanee Boilers in Omaha Schools is the title of an interesting booklet covering the inspection of the heating and ventilating equipment in 22 Omaha. Nebraska, schools. Kewanee service in solving heating and ventilating problems is available through the branch offices maintained in all the larger cities of the country.

PHILIP HAAS COMPANY, Dayton, Ohio, manufacturers of Flush Valves, Automatic and Frost Proof Closets. Catalog "B" published by this company emphasizes the features of the Universal Flush Valve and the Universal Seat Action Flush Valve. Information is included covering the piping, pressure, volume, etc., for flush valves. Complete data is given on the measurements for all styles of installations. Haas Pressure Tank closet combinations as well as Haas Frost Proof closets, are fully described in separate pamphlets.

KEWAUNEE MFG. CO., Kewaunee, Wis., manufacturers of Laboratory, Drafting Room and Manual Training Furniture. The Kewaunee Book of Laboratory Furniture is a complete reference covering every phase of laboratory planning and equipment. The 400 pages contained in this book completely describe every detail in the construction of Kewaunee Laboratory Furniture and illustrate the entire line of laboratory furniture manufactured by this company. Twenty pages of floor plans cover practically every phase of equipment for the sciences and arts departments of present day educational institutions. These designs show in detail the possibility of conserving floor space and obtaining greater efficiency from Qualified and Standardized Laboratory Furniture. The information contained in the Kewanee Book is published in 14 sections as follows:

Part 1. Floor Plans.
Part 2. Physics Furniture.
Part 3. Chemical Furniture.
Part 4. Biology Furniture.
Part 5. Agricultural Furniture.
Part 6. Electrical Furniture.
Part 7. General Laboratory Furniture.
Part 8. Physiography Furniture.
Part 9. Domestic Science and Art Furniture.
Part 10. Commercial Department Furniture.
Part 11. Drafting Room Furniture.
Part 12. Manual Training Furniture.
Part 13. Kindergarten Classroom Furniture.
Part 14. Letters.

A supplement to the Kewaunee Book contains a special review of the Lincoln Type Physics and Chemistry Desks. The chief merits of the Lincoln Type Physics and Chemistry Desk as well as its educational features illustrated in this pamphlet are as follows:

(a) All the science work can be done by the student in one room and in one place.
(b) Students face the instructor all the time.
(c) Provides adequately for comfortable work in a standing or sitting position, thus making it possible for the student to write notes, make drawings, do reference reading, perform laboratory experiments or observe demonstrations by instructor.
(d) Permits instructor to give demonstrations, quizzes, direct reference work and hold class discussions in the same room at any time during the science period, thus eliminating fixed laboratory and demonstration schedules.
(e) Apparatus is stored where used.
(f) Individual storage spaces for students.
(g) Instructor can see the entire class from any location in the room.
(h) The instructor's labor is reduced by concentrating all tools, materials, and equipment in a much smaller floor space than is usual in the design requiring separate lecture room and laboratory.

Kewaunee Drafting Room and Manual Training Furniture. These products are described and fully illustrated in a 56-page catalog published by this company. Floor plans of vocational shops add considerably to the value of this catalog.

STANDARD CONVEYOR COMPANY, North St. Paul, Minn., manufacturers of spiral slide fire escapes. An illustrated booklet published by this company describes the installation of Standard Spiral Fire Escapes in schools. Specification data together with construction details are covered.

STANDARD GAS EQUIPMENT CORP., successors to the Wm. M. Crane Co., 18-20 E. 41st St., New York, N. Y., manufacturers of Vulcan Gas Appliances. The matter of properly equipping a domestic science schoolroom and cafeteria in schools is a very important one. This company has made a particular study of this subject and valuable data and information on this subject is available to school officials and architects. Through its series of pamphlets this whole subject is covered, including plans, specifications and data. Vulcan Gas Appliances include every type of cooking range from the multiple unit for use in the safeteria and lunchroom to the small gas plate in the domestic science department. Catalogs will be sent on request.

THE STEWART IRON WORKS CO., Cincinnati, Ohio, manufacturers of iron and wire fences. Catalog No. 50-A and Book of Designs "C" describe and fully illustrate the various types of fences manufactured by this company. The information includes data and installation details. This company maintains a service department and is interested in cooperating with school officials and architects in solving their fencing problems.

NATURAL SLATE BLACKBOARD CO., Pen Argyl, Pa. "Natural Slate for Blackboards" is the title of a sixteen-page pamphlet devoted to the origin, characteristics, preparation and finishing of blackboards, and to its setting and installation in school buildings. The pamphlet gives the standard lengths, widths, and thicknesses of slate for different uses, and shows the amount of blackboard space to be provided according to the method of instruction and the use of the particular room in which it is to be installed.

A feature of the pamphlet is the section giving the basic specifications for furnishing and installating slate blackboards, and examples of typical installations.

STRUCTURAL SLATE CO., Pen Argyl, Pa. A series of pamphlets offering specific data and standards for the selection and use of structural slate. The information was compiled in cooperation with the structural service bureau, and includes such details of the service as commercial grades and finishes, structural characteristics and uses for particular purposes, specifications for stairways, fittings, trimmings and accessories, toilet enclosures, urinal stalls, shower stalls, laundry tubs, sinks and sink tops, together with information on the architectural uses, surfaces and finishes of slate products. The material is intended for the use of the

The DUNHAM
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HEATING SERVICE

What Dunham Heating does for hard-to-heat schools

DUNHAM Heating Service has a notable record in curing hard-to-heat schools where the original steam heating system has proved inadequate or where it was not installed in accordance with the advanced standards recommended by C. A. Dunham Co.

If your school is in this hard-to-heat class, Mr. Superintendent, Dunham Specifications will, if carried out,

—fill every radiator with steam.
—cure knocks and pounds which now distract students and interfere with the work of teachers.
—remove all condensate from radiators.
—reduce coal bills to a noticeable degree.
—eliminate hissing, leaking air valves which sputter and waste steam.
—banish valve troubles due to leaky control valves.

Your existing heating equipment can be made over at small cost to conform to Dunham Specifications. May we work with you toward this improvement? Your inquiry involves no obligation, yet may result in widespread economies.

Sixty branch and local sales offices of C. A. Dunham Co. in the United States and Canada bring Dunham Heating Service as close to your office as your telephone. Consult your telephone directory for the address of our representative in your city.

architect in specifying the type of slate to be used in new buildings in course of erection.

KNOWLES MUSHROOM VENTILATOR CO., 202 Franklin St., New York, N. Y. The Ventilation of Auditoriums. The Knowles Mushroom air diffuser has been widely accepted as the standard for floor openings in auditorium ventilation. The new "notch" type has been tested for efficiency in each delivery and has been found to deliver the full amount of air which is possible by the flue area of the connected pipe.

The present catalog lists and illustrates the standard "notch" type air diffuser, the "aisle hood" deflector, the "camelback" air diffuser, the "single, double and bottom damper" diffusers, and the "lever lock" air diffuser. Complete specifications, dimensions and data for installation are included.

THE LYON METALLIC MFG. CO., Aurora, Ill., manufacturers of steel lockers. The steel locker has been universally accepted as the standard for school installation, because of its economy, long life, safety against fire, and sanitary qualities.

The Lyon handbook of steel lockers presents a wide line of lockers, designed especially for school use. It gives not only complete descriptions of the single tier lockers, double tier lockers, compartment lockers, box lockers, basket racks, but it also includes locker benches, wardrobe cabinets, standard cabinets, and janitors' cabinets which the firm manufactures.

Every detail of manufacture is presented for the use of school authorities and architects. Complete tables of sizes, door perforations, installation specifications, provisions for ventilation, are given. Several typical layouts of economical locker rooms are suggested.

THE MILWAUKEE CORRUGATING COMPANY, Milwaukee, Wis., manufacturers of Fire-safe Sheet Metal Products. The Milcor Architectural Sheet Metal Guide is the title of the latest book issued for the assistance of architects, sheet metal contractors, and school authorities by the Milwaukee Corrugating Company. It lists and contains specification data on metal, tile, and shingles, and trimmings, sheet metal roofing, roof ventilators, metal ceilings, ornamental skylights, and other sheet metal products. Complete architectural specifications are included for the help of architects and building committees.

The Milcor Manual, a data Book on Milcor materials and methods.

FRED MEDART MANUFACTURING CO., St. Louis, Chicago, New York, San Francisco, manufacturers of Gymnasium and Playground Apparatus.

Catalog L-3, gymnasium apparatus, including the complete line of Medart apparatus, furnishings, and supplies. An important chapter in the catalog is devoted to the planning of gymnasiums and is a reliable guide for architects and school building committees. It includes some typical plans and layouts for various gymnasium games.

Catalog M-2, Playground Apparatus. This publication represents the complete line of Medart outdoor play apparatus. It includes complete specifications and suggestions for purchasing.

A-9. Steel Lockers and Cabinets. The complete line of Medart lockers, gymnasium baskets, and shelving, combination lockers, steel cabinets, wardrobes, book racks, and library shelving. The book suggests methods of installing recess lockers and laying out locker rooms, etc.

S-2. Steel Shelving. This catalog shows the entire line of Medart steel products for stock rooms, offices, and factories, and recommends a considerable number of items which are usable in school warehouses, school stock rooms, manual training, and other vocational shops.

The Medart Company has for years conducted an engineering department at St. Louis, which is ready to assist architects, building committees, superintendents, and others in the planning of locker rooms and equipment for schools and colleges.

S. A. MAXWELL & CO., 3636-46 Iron Street, Chicago, Ill., manufacturers of Window Shades and Shade Adjusters. The Airanlite double roll window shade is widely used by schools in the middle western and in the eastern states because it provides a safeguard for eyesight, and is of particularly durable construction. The shades are furnished in any standard shade cloth, but are usually manufactured of a special, stout canvas which is semi-translucent, and is so woven that a considerable amount of light and air filters through. The shades are mounted on patented double roll brackets fitted with a light stop between, and intended to be set in the middle or slightly above the middle of the window. The shades roll independently so that any adjustment is under the control of the teacher. Under heavy school service the shades have been found to be particularly long in life and provide ample air, light, and ventilation. Complete circulars are available for architects and school purchasing authorities.

N. O. NELSON MFG. CO., Edwardsville, Ill., manufacturers of Plumbing and Heating Supplies. In its new Catalog N the N. O. Nelson Manufacturing Company presents the widest range of sanitary appliances, steam and hot water heating and engineering supplies which the firm has manufactured and distributed during the past forty years. The catalog is a cloth-bound book of 800 pages and includes a large selection of toilet room fixtures, washroom fixtures, sanitary drinking fountains, toilet and bath enclosures, sinks, plumbing and heating specialties, water supply and pumping systems, etc. The firm manufactures a line of tubular steel flagstaffs and halyard carriers for school flag installations. The catalog is an essential part of every school purchasing agent's and architect's library.

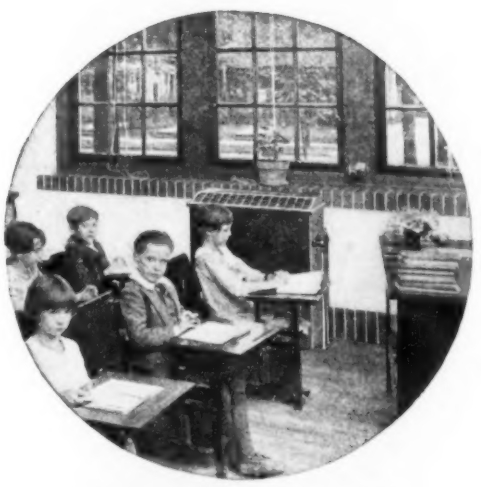
E. H. SHELDON & CO., Muskegon, Michigan, manufacturers of laboratory, home economics and vocational furniture, have issued a new catalog which is literally an encyclopedia on the planning and equipment of laboratory, vocational and home economics departments. The firm has for many years prepared layouts for home economics and vocational departments, and is prepared to render service to school authorities who are working out special layouts for these departments.

THE SANI PRODUCTS CO., North Chicago, Illinois. Sanitary attractive white table tops have become an indispensable part of school lunchrooms. The old-fashioned wooden tables and lunchroom counters are entirely a thing of the past, both from the standpoint of economy, up-keep and durability. The new illustrated price list of the Sani Products Company contains complete information on the size, construction, and finish of the various types of Sani metal and wood base tables, lunchroom sec-

(Concluded on Page 154)

High School—Dolgeville, N. Y.
UNIVENT Equipped
TOOKER & MARSH, *Architects*
101 Park Ave., New York, N. Y.

Fifty Years from Now



UNIVENT
(TRADE MARK)
VENTILATION

Time has no effect on fundamental principles. Natural laws are unchanging. Right is always right. Wrong is always wrong.

The Principle of the Univent is Right and will always be Right. The Univent today is the same in principle as the original Univent, and 50 years from today it will still be the same in principle. The only change that has occurred is the refinements that simplify and perfect the application of the principle.

Univent Ventilation—fresh heated air from the window—circulated in each room without draft—is the highest type of modern school ventilation. It will always be the highest type. The growing appreciation of the vital need for better ventilation in school means that 50 years from now nearly every school will be Univent Ventilated.

The Univent may be installed in new or old schools. Members of School Boards are invited to write for our Architect's and Engineer's edition of "Univent Ventilation."

THE HERMAN NELSON CORPORATION *Moline, Ill.*
1919 Third Avenue

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BUFFALO	GRAND RAPIDS	TORONTO	CHICAGO	KANSAS CITY	SEATTLE
SYRACUSE	CLEVELAND			DENVER	VANCOUVER

The cut above illustrates the new school building at Fairhaven, Mass., and shows one of the latest and most complete designs of bungalow schools.

Where land is not expensive, it is often regarded as desirable to house all the pupils on one floor. Two 48-inch in diameter

"GLOBE" VENTILATORS

are used on this building. The "GLOBE" is in successful service on school buildings in practically every state in the Union. Full information furnished on request to Department J.

GLOBE VENTILATOR COMPANY, TROY, NEW YORK

(Concluded from Page 152)

tional tables, cafeteria counters, water coolers, coffee urns and Sani metal hardware, Sani metal stools, etc. The catalog is in every way complete for assisting architects and school authorities in specifying and purchasing all of the general and special types of tables, stools, etc., which the firm manufactures to meet school demands.

THE STEFFENS-AMBERG CO., Newark, N. J., manufacturers of Panic Exit Locks, have prepared a complete illustrated catalog of the Smith improved exit locks for school use. The catalog contains the complete specifications of the various types of exit latches which the firm manufactures to meet school requirements. Complete details for installation are included.

THE LANDIS ENGINEERING AND MANUFACTURING COMPANY, Waynesboro, Pa., manufacturers of Electric Time and Clock Systems, has issued a catalog of its electric time and clock systems for schools. The firm maintains a complete service department for school boards and architects, and is prepared on receipt of request to suggest complete systems adapted for any individual local school need.

VALENTINE & COMPANY, 456 Fourth Avenue, New York City, has issued a series of pamphlets on Valspar enamel, outlining and specifying the use of this material in school buildings and other institutional structures. Valspar is furnished clear or in colors, and the firm is prepared to make definite recommendations for specifying it for general interior trim and varnishing battleship linoleum, and for other uses in outdoor and indoor locations. School authorities, building committees, and architects can obtain the Valentine architectural service by addressing the firm in New York City.

HENRY WEIS MANUFACTURING COMPANY, Atchison, Kans., has issued a complete catalog of the Weis steel compartments for toilet rooms, shower baths, dressing rooms, cubicals, etc. The catalog lists and illustrates the entire Weisteel line and contains blue prints of construction details, suggested layouts, and suggested specifications for the use of building committees and architects. The catalog also includes complete details of standard units and hardware for repairs and replacement purposes. The firm is ready to render structural and architectural service on request.

THE DURIRON COMPANY, Dayton, Ohio, manufacturers of Acid-Proof Building Equipment, have published two bulletins on drain pipes and laboratory equipment of particular interest to school authorities and school architects.

Bulletin 129-A contains information on the layout of drain pipes in school laboratories and on the installation of laboratory hoods.

Bulletin 130 contains full information on Duriron ventilating fans for laboratories.

Bulletin 134 is a complete handbook of Duriron drainage pipes and fittings, acid resisting traps and sink outlets, floor drains, catch basins and acid-proof ventilating fans, and air exhaust ducts.

The firm is prepared to render architectural service to architects, school building committees, etc., in solving problems of laboratory drainage and ventilation.

THE NARRAGANSETT MACHINE CO., Providence, R. I., Chicago, New York. Gymnastic Apparatus. The catalog of gymnastic apparatus made by the Narragansett Machine Company is a document which every gymnasium director considers essential to his office library. It contains not only complete descriptions and illustrations of the wide line manufactured by the Narragansett Machine Company, but it also includes suggestive illustrations of gymnasiums and several floor plans. The firm maintains a special service department which is prepared to criticize the plans of architects, to suggest layouts for apparatus and equipment, and to outline special lists of apparatus adapted to special educational and recreational programs.

INDIANA LIMESTONE QUARRYMEN'S ASSOCIATION, Bedford, Ind. Indiana Limestone for School and College Buildings is the title of a lavishly illustrated booklet showing the application of limestone to educational structures throughout the United States. It is noteworthy that the booklet contains the most widely known architectural triumphs in college buildings and groups erected during the past twenty-five years, as well as numerous high schools and elementary schools by the foremost architects who specialize in schoolhouse work. The text of the booklet contains authoritative articles on the use of limestone as applied to the design of school and college buildings.

Indiana Limestone—The Nation's Building Stone is the title of a fully illustrated technical discussion of the use of limestone, for architects and building committees. It is only one evidence of the work of the service bureau which the Indiana Limestone Quarrymen's Association maintains for architects and building committees, and which is prepared to assist in solving any special problem which may be confronting school authorities.

Indiana Limestone Specification Data. An official standard form for specifying Indiana Limestone.

THE DETROIT STEEL PRODUCTS COMPANY, manufacturers of steel fenestra and steel windows for schools, Detroit, Mich. The new catalog. Steel Windows for Schools, is not a catalog in the ordinary sense which the term is understood by manufacturers. It begins with a valuable discussion of the problem of daylighting and ventilating school buildings, and contains articles on scientific ventilation, the influence of steel windows on the character of school architecture.

The catalog proper contains detailed construction facts, complete lists of sizes and types of installations, detailed mullion, and detailed illustrations of a number of school buildings which are equipped with Detroit fenestra are shown. These include not only high schools and colleges, but also school and college libraries and shops.

UNION BLIND & LADDER CO., INC., Oakland, Calif., manufacturers of Acme Rolling Wood Partitions. Flexibility of school interiors secured through the use of Acme Rolling Wood Partitions in old and new buildings is shown in the catalog published by this company. "Making rooms do double duty" is the title of a descriptive booklet illustrating the adaptability of Acme Partitions.

ALBERT PICK & COMPANY, 208 W. Randolph St., Chicago, Illinois. Equipment and supplies for cafeteria, lunch rooms, domestic science departments. School Cafeteria Booklet Y93 outlines in complete detail the essential equipment necessary to take care of any number of children. Floor plans covering small and large units furnish a valuable aid to architects and school officials in laying out and equipping these rooms.

INSTALLED BY THE NATIONAL HEATING AND VENTILATING CO.
WAUSAU, WISCONSIN.

THE LOGICAL ANSWER FOR YOUR HEATING AND VENTILATING PROBLEM

Lower initial cost + Low maintenance + High Efficiency + Better ventilation and uniform heat =

THE NATIONAL SYSTEM

READ Mr. Gregory's letter about the National System in the Park Falls High School. 40° below zero is not unusual winter weather in Park Falls.

BOARD OF EDUCATION-PARK FALLS

The Haines Company,
Chicago,
Ill.

Gentlemen:

Through some error your favor of March 5th has been mislaid, and is again called to my attention.

Regarding the P.H. MaGirl furnaces which were installed in our High School Building by the National Heating Company of Wausau, Wisconsin, will say:

First, I have been in the steam and hot water heating game more or less for a good many years, and I never really saw a good heating plant until I saw the one in our building. We claim and all the State Inspectors tell us that we have the best High School Building of any city of our size in the State, and we certainly have one of the best heating plants, and I say more, as to economy in fuel consumption and satisfactory results the furnaces as installed here has my unqualified endorsement.

Yours very truly,

(Signed) C. E. Gregory,

Park Falls, Wisc.

THE NATIONAL SYSTEM heats and ventilates at the same time. A complete change of air takes place every seven and one-half minutes. The occupants are literally bathed in fresh air properly warmed and humidified.

The danger of contracting coughs, colds and sore throats is minimized in rooms heated and ventilated by the National System. The pupils are wide awake and contented.

Write our nearest agency for particulars about the National System. They will gladly make you plans and estimates.

National Heating & Ventilating Co., Minneapolis, Minn.
National Heating & Ventilating Co., Wausau, Wis.
National Heating & Ventilating Co., Indianapolis, Ind.
National Heating & Ventilating Co., Philadelphia, Pa.
Stanton Heater Co., Martins Ferry, Ohio
Bryce Heating & Ventilating Co., Toledo, Ohio
J. C. Bayer Furnace Co., Portland, Oregon
Atlas Heating & Ventilating Co., San Francisco, Calif.
Hoagland-Lakin Electric & Eng. Co., Los Angeles, Calif.
Supreme Heater & Ventilating Corporation, St. Louis, Mo.
Southwestern Mfg. & Supply Co., Phoenix, Ariz.
Pierce Blower Corporation, Olean, N. Y.
C. S. Hopkins, M.E., Dallas, Texas
General Heating Supply Co., Kansas City, Mo.
Cook-McDonnell Co., Oklahoma City, Okla.
Brizee Metal Works, Twin Falls, Idaho
W. A. Haberstroh & Son, Omaha, Nebr.

P. H. MaGIRL FOUNDRY AND FURNACE WORKS

BLOOMINGTON ILLINOIS

New and Economical Equipment of Interest to School Administration Officials

When You Plan Your New School Building—

What provision have you made for lavatory equipment? You want the most sanitary, the most economical, the most efficient? Naturally. Then in your building plans include

·AIRDRY·

Registered U. S. Patent Office.

THE ELECTRIC TOWEL

Airdry consists of an electric motor, a heating element, and a fan—enclosed in a porcelain enamel case and controlled by a conveniently located foot pedal. Place your foot on the pedal—the warm air rushes out—dries your hands and face Nature's way—by evaporation, leaving the skin soft and smooth. The machine comes in two types, the pedestal type and the recessed wall type.

Airdry is absolutely sanitary and makes for a completely clean, neat, and sanitary lavatory. It is economical, for electrically operated, it saves from 60 to 85 per cent over towels. And Airdry is ***superlatively convenient*** with its continuous towel service.

Sanitation, economy, convenience — those are the reasons why leading school officials and leading architects are choosing Airdry for finest school buildings throughout the country.

Leading schools that have installed this ideal lavatory equipment are: Minneapolis Public Schools, Chicago Public Schools, Buffalo Public Schools, University of California, Pittsburgh Public Schools, New Trier Township High School, Palo Alto Union High School, Harvard University, Columbia University, Wellesley College, Cornell University, Crane Technical High School, Haugan School, Modesto High School, Philadelphia Free Library, Art Institute of Chicago, Field Museum of Chicago—and many others.

Write for further information.

THE AMERICAN AIRDRY CORPORATION

7720 South Chicago Avenue **Chicago, Illinois**

NEWS OF SCHOOL OFFICIALS

—Robert Grieve, a member of the school board of Providence, R. I., since 1912, died at his home on October 15th. Mr. Grieve was reelected to office in 1922 and his term would not have expired until 1928. He served on a number of special committees during his term and in 1922 was a member of the committee on private schools. He acted as chairman of the committee on the annual report from 1916 to 1918.

—Mr. D. T. Wycoff, for many years president of the school board of Walsenburg, Colo., died on October 30th. Mr. Wycoff had been identified with the progress of the schools for a long time.

—Shelbyville, Ky. At a recent school election, Mr. S. G. Lawson was elected president, and Mr. Fielding Ballard, secretary. Other members elected were Henry Maddox, Mark Wakefield, G. S. Chowning, Geo. N. Thompson and Dr. C. C. Risk.

—St. Louis, Mo. Upon the recommendation of the commissioner of school buildings, the position of superintendent of construction has been abolished. A new position, to be known as assistant to the commissioner of school buildings, has been created, with a salary of $5,000 per annum. Frank A. Borgsteadt, who held the former position, will occupy the new position.

—Mr. Charles M. Moderwell will retire from the presidency of the Chicago school board on March first. Mr. Moderwell will in the future have his residence in Evanston, and for that reason desires to be relieved of his duties as head of the board.

—The school board of Lansing, Mich., recently adopted resolutions on the death of Christian Breisch, long a member of that body. Mr. Breisch was prominent in the business circles of the city and had served as a member of the board for the past sixteen years. He was instrumental in securing new school buildings and equipment, and in providing sites for future buildings.

—Supt. W. T. Cash, of Taylor County, Florida, retired from office on January 5th, after a service of four years, during which time he has stood for the highest standards in the educational field. Among the important activities to which he has given attention are the consolidation of rural schools, the improvement of high school facilities, the improvement of the teaching staff, the enforcement of compulsory attendance, and the promotion of healthful conditions both with regard to pupils and school buildings. Fourteen small schools have been consolidated into six and five useless schools have been eliminated. Two high schools have been established in the county, one rated as a senior A school, and the other as a junior A school. All teachers in the county hold certificates of a high grade and there are five college graduates among those holding teaching positions in county schools.

—Mr. Charles F. Otto has been appointed principal of the Ludlowe high school at Fairfield, Conn. Mr. Otto is a graduate of the Adelphi Academy and Columbia University, New York, and was formerly an instructor at Stanford.

—Mr. James H. Wilson, principal of the high school at Rocky Ford, Colo., has been elected superintendent of schools to succeed Mr. R. J. Walters. Mr. A. B. Childears has been elected principal of the high school to succeed Mr. Wilson.

—Mrs. Mary C. C. Bradford was reelected superintendent of schools of Colorado. The party ticket upon which she ran fell behind twenty-five thousand votes.

—David Phillip Hardy has been appointed sixth deputy superintendent of schools at San Francisco, Calif. He taught in the schools of that city for eight years.

—New Philadelphia, Ohio. The citizens by a vote of 4 to 1, authorized a bond issue of $375,000 for the construction of a new junior high school.

Beg Your Pardon!

In the December number of the American School Board Journal there appeared a biographical sketch and photograph of J. G. Leedham, business manager of the board of education, Lincoln, Nebraska. The name should have been spelled Ludlum. Somewhere between the editorial rooms and the proof reader the error was made. Perhaps it is easy to mistake Ludlam for Leedham, but we apologize just the same.—Editor.

NOT A CASTLE ON THE RHINE BUT A SCHOOL ON THE HARLEM.

A view of the partially completed George Washington School, New York City, as seen from Morris Heights and the Harlem River. The school, when completed, will be one of the finest in the city.

The World's Largest Building

The American Furniture Mart Building
Chicago, Ill.

Architect
Henry Raeder, Chicago

Associates
Geo. C. Nimmons & Co.
N. Max Dunning
Chicago

General Contractors
Wells Brothers
Construction Co., Chicago

Heating Contractor
Gallaher & Speck,
Chicago

BUCKEYE HEATOVENTS

were selected for this fine building because actual tests proved they were best. They are supplying over Seven Million Cubic Feet of warm, filtered air every hour.

For finer structures such as this, where the best in mechanical equipment is the standard, Heatovent is the logical choice of all ventilating systems. For Heatovent combines perfect mechanical operation with unusual dignity of appearance, simplicity, convenience and serviceability.

The simplicity of construction of Heatovent assures long life and service uninterrupted by mechanical troubles. Any contractor can make Heatovent installation without difficulty and at very low labor costs. In addition, this company maintains a corps of engineers always available for consultation with you.

Write our nearest branch office or direct to the factory.

The Buckeye Blower Company

COLUMBUS, OHIO

808 Monadnock Block, Chicago, Ill.
372 Whitehall Street, Atlanta, Ga.
Case & Morse, 1018 4th Ave. S., Seattle, Wash.
1016 Baltimore Ave., Kansas City, Mo.
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1400 Broadway, New York
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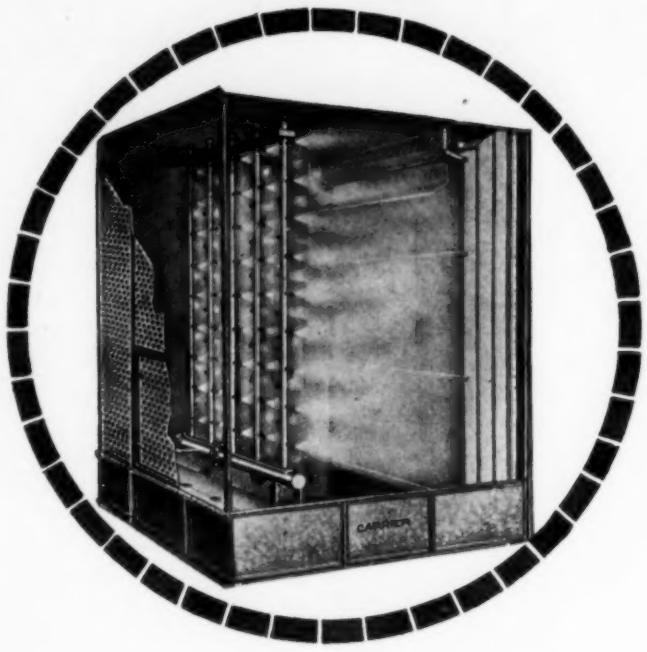
708-10 Columbia Bk. Bldg., Pittsburgh, Pa.
333 Jackson Bldg., Buffalo, N. Y.
403-405 Sharon Bldg., San Francisco, Calif.



Carrier Washers are economical to install and operate

They come to you in few sections—easily erected.

Their unsurpassed initial efficiency is maintained at negligible cost. Only a few minutes of the janitor's time are required once a week.

Painting once a year may be necessary if non-corrosive metal is not specified, and this is facilitated by easily removable plates.

Our engineers will be pleased to advise without obligating you in any way. Write them.

Carrier Air Conditioning Co. of America

186 Mortimer St. Buffalo, N. Y.

1920 - 400 Tons
1921 - 243 "
Saved 157 Tons

157 Tons of Coal Saved First Year

THAT'S what Electrozone did for the Bates School in St. Louis the first year after it was installed. And it's still doing it!

Coal consumption in this school, which, in 1920 (before Electrozone was installed) amounted to 400 tons, was reduced in 1921, 1922 and 1923 to 243, 220 and 248 tons respectively—an average yearly saving of 163 tons!

That's one of the reasons why 75 St. Louis schools are now equipped with Electrozone!

Electrozone has other desirable features, too:

1. It maintains an abundant supply of pure, fresh air in crowded school buildings.
2. Reduces installation costs.
3. Reduces size of boiler required.
4. Can be installed in old buildings as well as in new.
5. Old buildings can be doubled in size with no increase in size of boilers.
6. Can be installed at a cost of three cents per cubic foot.

Electrozone ventilation will do for your school what it is now doing for 75 St. Louis schools. Ask for Bulletin S-9 telling how. No obligation.

THE AIR CONDITIONING AND ENGINEERING CO.
2914 So. Jefferson Ave.
ST. LOUIS MISSOURI

They Investigated!

The Austin High School contract for Temperature Regulation was awarded only after thorough investigation. Salesmens' arguments were not considered. ***Result:***

THE NATIONAL SYSTEM

Automatic Temperature Regulation

More thorough the investigation, better we like it.

NATIONAL REGULATOR CO., 2301 Knox Ave., CHICAGO

Offices in Principal Cities

TRADE METAPHRAM MARK

SCHOOL ADMINISTRATION NOTES

—Wilmington, Del. A speech clinic conducted last year under the direction of Miss Gertrude Stewart, has completely demonstrated its usefulness in the schools. There are now 73 children receiving attention for defective speech. A number of children who were formerly unable to recite in class, are now making normal progress with their studies. Miss Stewart was formerly associated with Dr. Witmer in a clinic for atypical children in the University of Pennsylvania and is a leading expert in the field of special education.

—Seymour, Conn. Departmental teaching has been introduced in the seventh and eighth grades for the first time this year.

—The school district of Rocky Ford, Colo., has purchased a new truck and is now operating four G. M. C. and two Republic trucks, averaging 265 pupils daily. The pupils are carried to and from school at a cost of about six cents per day.

—Wilmington, Del. At the end of September this year the total enrollment of the schools was 14,625, while at the end of September, 1923, it was 13,938. This is an increase of 697 students. The total enrollment in the high school was 1,169 boys and 1,153 girls, or sixteen more boys than girls.

—A total of 1,535 pupils were enrolled in the several summer schools of St. Paul during the 1924 summer term. Of these, the larger number were pupils who had been conditioned in one or more subjects in the grade and high schools who took advantage of the opportunity to make up their work. In the high school, 79 per cent of the pupils in English classes, 70 per cent in Latin, 70 per cent in French, 87 per cent in mathematics, and 89 per cent in history classes made acceptable records. In the makeup classes of the grade schools, a general average of 86 per cent of the pupils enrolled did passing work. The greatest number of failures occurred in the arithmetic classes, the lowest in the history classes.

—Walsenburg, Colo. Primary rooms in the grade schools have recently been equipped with double tables in place of the regular desks. The change has met with the approval of pupils and teachers.

—Athens, Ga. The school system has been reorganized on the four-two-five plan, providing for a central high school of four grades, a departmental school of two grades, and five elementary grades from the first to the fifth.

—Springfield, Mo. An evening school was opened for the first time on October 15th. Among the subjects offered are shop mathematics, drafting for the metal trades and the building trades. A total of 92 students have enrolled and classes are held two evenings each week.

A luncheon, discussion club has been organized at Greeley, Colo., with an enrollment of seventeen men from the faculties of the State Teachers' College and the Greeley city schools. The club will take up the discussion of educational problems of timely significance.

—Miss Frances Mason, of the University of Minnesota, has been appointed as supervisor of primary grades at South Bend, Ind.

—Pueblo, Colo. District No. 1 has this year experienced an increase of ten per cent in pupil enrollment. It became necessary to add a number of new teachers to take care of the additional pupils.

—The State Board of Education of Delaware has adopted a ruling to the effect that pupils in public schools shall be required to receive 195 days of instruction annually. The action was taken as a step toward uniformity in the opening and closing of school sessions and in the number of days attended during an entire school year.

—Improved registration and attendance figures for the New York City public schools have been reported by Supt. William J. O'Shea and George J. Ryan, president of the board of education. The figures indicate a substantial reduction in the number of unduly large classes. The number of children on part-time at the end of the first month of school was 92,602, as against 95,368 on the opening day. The total enrollment on September first was 973,410.

—By virtue of the act of June 2, 1924, confering citizenship on Indians born in the United States, school boards may not exclude Indian children from public schools, according to a recent decision of Attorney General Dunbar of Washington. The ruling was given to State Supt. Josephine C. Preston, to dispose of a case arising in Stevens County, where the Indian service had discontinued a school. As a consequence, Indian children attended the local district school, and the school board desired to exclude them.

—New York, N. Y. The Bureau of Research of the department of education has completed a survey of the uses to which new school buildings, opened during the last four or five years, have been put. The inquiry has elicited facts relating to the extent to which the buildings have been used, and the relief which they have afforded not only to schools in the immediate neighborhood but to schools covering a wider area.

—Newburyport, Mass. Upon the suggestion of the teaching staff, the school board has substituted the four-term school year for the three-term year.

—Boston, Mass. The school board has under consideration an amendment to its rules to provide for the following change:

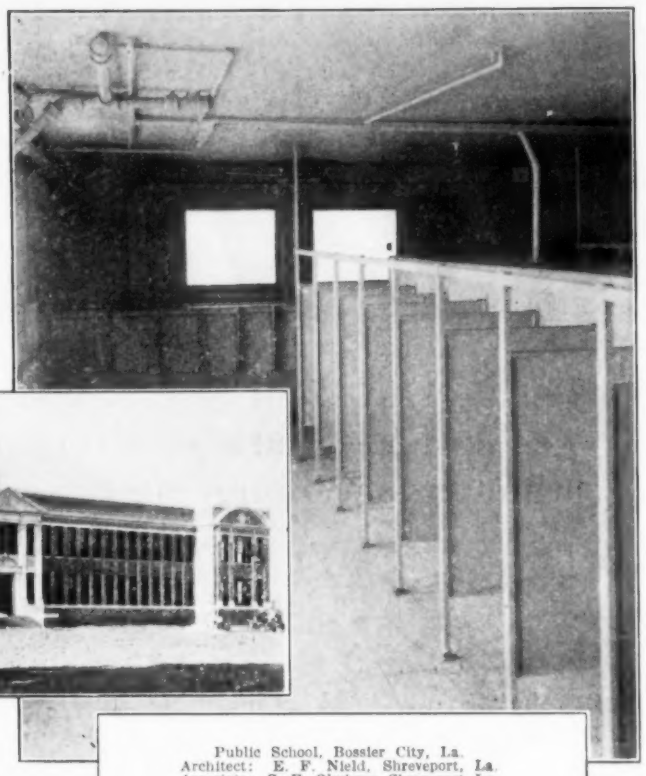
No agent or other person shall be permitted to enter school premises for the purpose of exhibiting books or articles offered for sale to teachers or pupils, or for any other commercial purpose; provided, that publishers of books and manufacturers of educational material or equipment which may be purchased from school funds or whose purchase is under consideration, who obtain a permit from the office of the superintendent, may visit principals in their respective schools at such times as will not interfere with the regular work of the schools.

—Anacortes, Wash. Mrs. G. V. Brown has been appointed attendance officer for the public schools, to succeed Mrs. J. A. Laurie.

Another fine school building equipped with

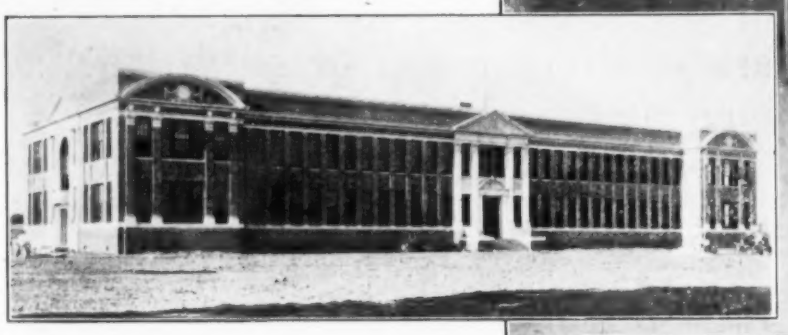
WEISTEEL
TRADE MARK REGISTERED
COMPARTMENTS

First Choice of Architects and Builders for Toilets, Showers and Dressing Rooms



—and WEISTEEL will last as long as the building itself because it's built of 16 gauge copper bearing furniture steel with joints firmly welded and has a wear resistant finish that will remain in excellent condition indefinitely with ordinary care.

OUR CATALOG gives complete specifications and several plans for effecting economical installations. Secure a copy for your files.



Public School, Bossier City, La.
Architect: E. F. Nield, Shreveport, La.
Associate: C. E. Olschner, Shreveport, La.

This is part of the WEISTEEL installation in the excellent school building pictured above. It will remain just as you see it for years and years with ordinary care.

HENRY WEIS MANUFACTURING COMPANY
General Offices: ATCHISON, KANSAS

BRANCH OFFICES
New York, 110 West 34th St. Boston, 8 Beacon St.
Chicago, 105 W. Monroe St. Los Angeles, 616 S. Utah St.
Atlanta, 1317 Citizens and Southern Bank Bldg.

—Moline, Ill. An ungraded room for students subnormal in mental development has been proposed for early establishment. The room will be established in some central location, accessible to pupils from all schools. Special means of transportation to and from school will be provided in connection with other details.

—Aurora, Ill. A school patrol system under which students selected by principals will direct and control traffic in the vicinity of school buildings has been approved by Mayor Greene. The details of the system are to be worked out by the superintendent and principals in the schools.

Under the plan, two or more older boys are stationed at intersections near each school to halt traffic, and to assist small children in crossing streets. Each patrol officer will wear an armband. In addition to controlling speeding, the pupils will act as guardians for the smaller children going to and from school, and while at play on the school grounds.

—Supt. W. J. O'Shea of New York City has announced that two new high schools, with 7,039 sittings, and ten elementary schools, with 19,819 sittings, will be ready for the opening of the February term.

In November the building bureau received bids for five new schools under the new group contract plan, under which bids are invited for equipment and heating at the same time as estimates are received for the general construction work.

Included among the ten elementary schoolhouses being pushed to early completion are five of the largest type of buildings, each with a capacity of more than 2,000 pupils on full time, regular session.

—Madison, Wis. The school board recently refused to approve a school savings plan to be installed under the supervision of the local clearing house association. The board members opposed the taking of teachers' and pupils' time for banking work.

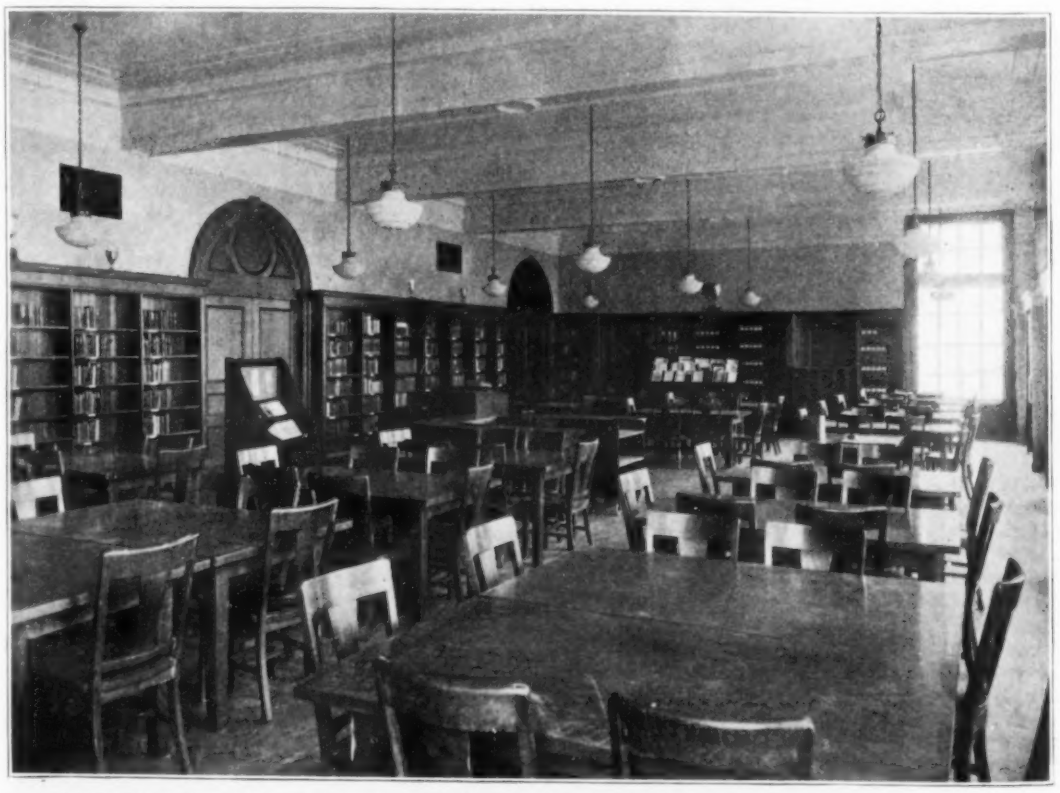
—Syracuse, N. Y. School safety patrols to relieve police officers of traffic control near schools, have been organized under the direction of the Syracuse Safety Council. The first unit was formed at the vocational high school and the plan will be extended to all schools under a plan outlined by H. M. Starling, manager of the local safety council. As far as possible, the members of the safety patrol will be older boys of the boy scout safety units. They will be trained and drilled in handling children and in directing traffic near the schools.

—An initiative measure designed to compel parents of the state of Washington to send their children to public schools, instead of to private or parochial institutions, was defeated in the recent election. Returns showed 53,117 votes for the bill and 86,107 against it.

—Brides of school age in Cincinnati cannot be compelled to attend school, according to a recent statement of Robert O'Donnell, attendance officer in the public schools. Under a ruling of the Ohio attorney general, a married infant female is considered a woman and may not be compelled to attend school.

—At Brookline, Mass., parents and students have protested against an order of the board lengthening the daily session of the high school by half an hour. Under the rule, the session begins at 8:30 in the morning as in the past, but continues until two o'clock instead of 1:30, with two half-hour lunch periods in place of one.

(Continued on Page 163)



LIBRARY AND READING ROOM OF THE REYNOLDS HIGH SCHOOL, WINSTON-SALEM, N. C.

ROOSEVELT
HIGH SCHOOL,
DAYTON, OHIO

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Schenck & Williams,
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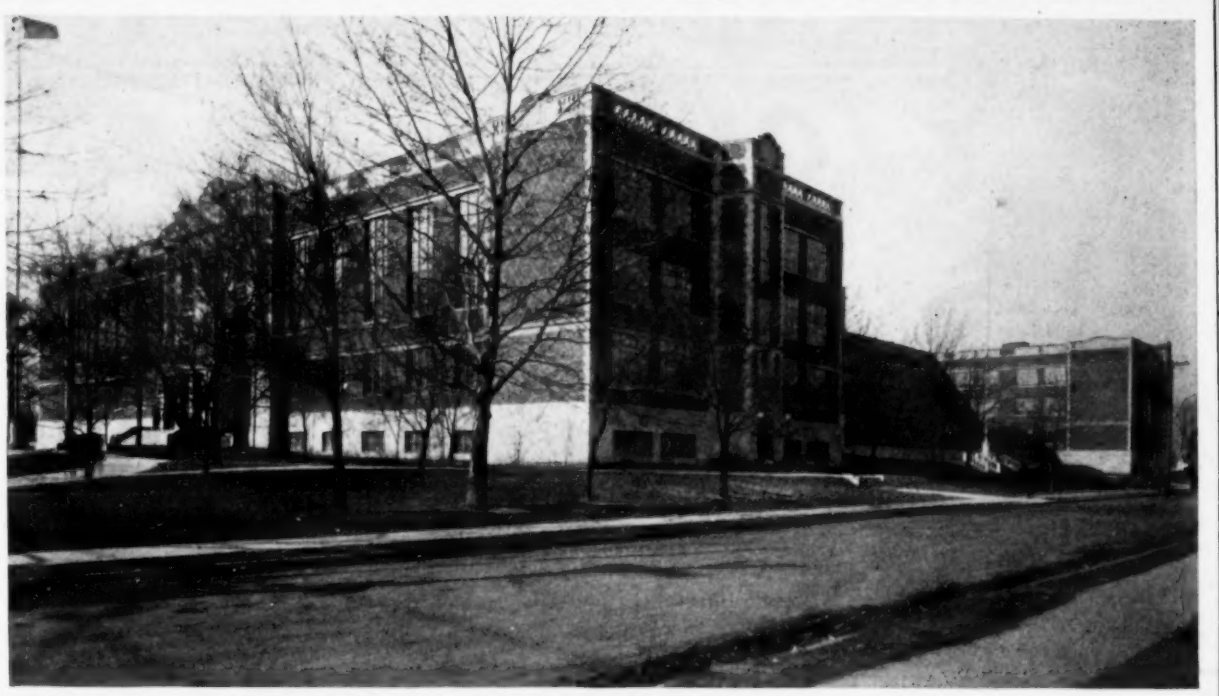

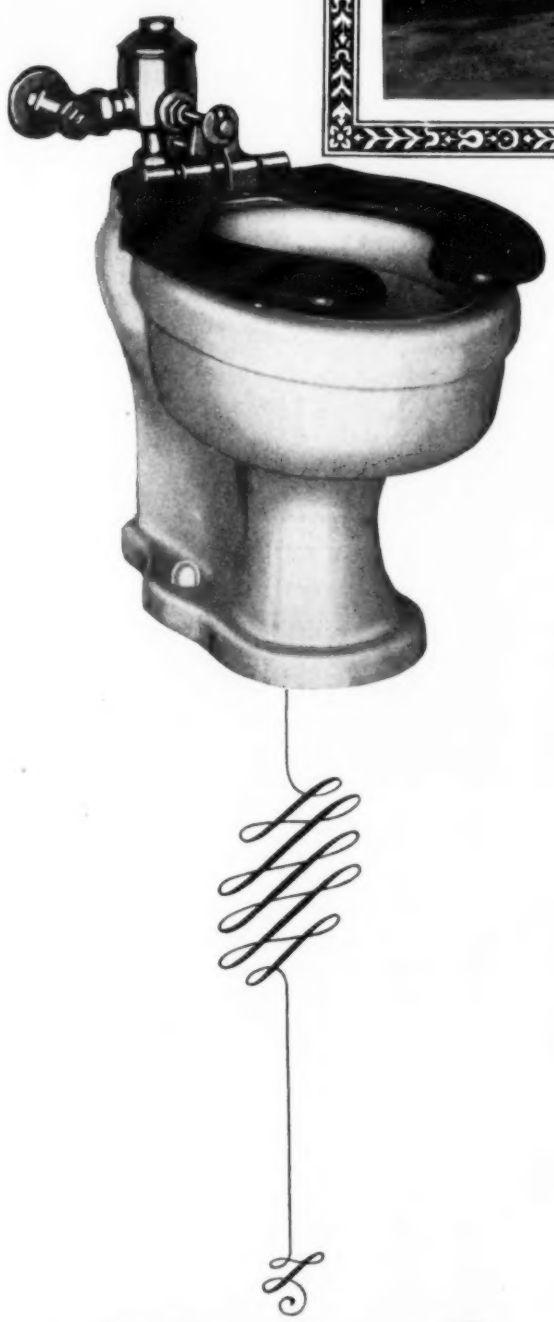

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It's HAAS Equipped–

a positive assurance of pre-eminent satisfaction

In common with hundreds of other schools, the Roosevelt High School, at Dayton, Ohio, is completely equipped with Haas Water Closets and Haas Flush Valves—which means that it is *satisfactorily* equipped for a lifetime of trouble-free service.

Twenty-eight years devoted exclusively to the manufacture of Haas Water Closets and Haas Flush Valves, has resulted in a perfection of design and construction, the merits of which are most aptly reflected in the economy, reliability and long life associated with *every* Haas installation.

School Officials and Architects, in specifying Haas Water Closets and Haas Flush Valves for installation in new buildings and for replacements in old, are assured of getting the very best the market affords and at a price that is truly moderate.

HAAS WATER CLOSETS — HAAS FLUSH VALVES
A COMBINATION FOR EVERY TYPE OF SERVICE

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PHILIP HAAS COMPANY

ESTABLISHED 1896

DAYTON, OHIO.

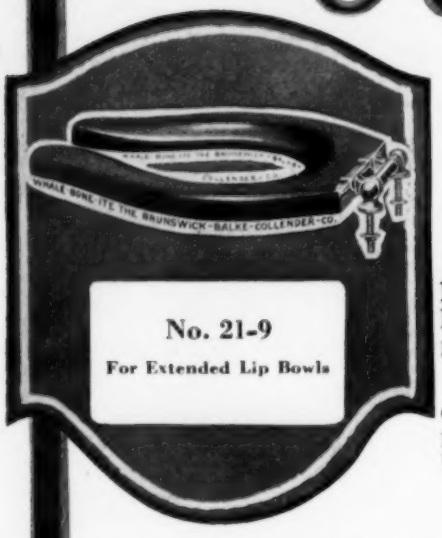
THE BRUNSWICK-BALKE-COLLENDER CO.

WHALE-BONE-ITE

REG. U.S. PAT. OFFICE

CLOSET SEATS

Toilet Seats



No. 21-9

For Extended Lip Bowls

CUT SHOWS NO. 23-9 SEAT

No. 23-9 Ebony
Price $9.95 Each
packed ready to attach

Other styles at proportionate prices f. o. b. factory

No. 18-59

For Extended Lip Bowls

No. 18½-59

For Regular Bowls

Sanitary Service

Assured

EASIEST CLEANED

Immediate shipments of all school orders

ORDER NOW!

Urine and excrementious matter causes deterioration, but not in WHALE-BONE-ITE, which is urine and moisture proof.

IT STANDS THE GAFF LIKE A BOWLING BALL

THE MORE IT IS USED THE BETTER IT LOOKS

Hinges are at rear, connected with concealed plate—no metal top or bottom—strong, rigid and fool-proof.

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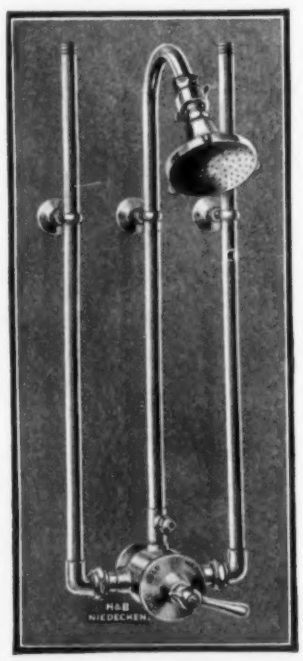
THE BRUNSWICK-BALKE-COLLENDER CO.
623 SO. WABASH AVE. CHICAGO

Sold by All Leading Jobbers



NIEDECKEN SHOWERS

GIVE

PERFECT CONTROL

which insures economy of water and fuel

THE LOCK SHIELD FLOW CONTROL regulates the force of water from the shower head and can be set to give a determined quantity of water and can not be tampered with; this makes the Niedecken Shower especially adaptable for school installation.

The Heart of a Shower is the Mixing Control

NIEDECKEN MIXERS are practically everlasting, the few parts subject to wear, even the valve seats, can be replaced after years of use. The only tool required to take the Mixer apart is a screw driver and it cannot be re-assembled in a wrong manner.

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HOFFMANN & BILLINGS MFG. CO.
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THE INCOMPARABLE

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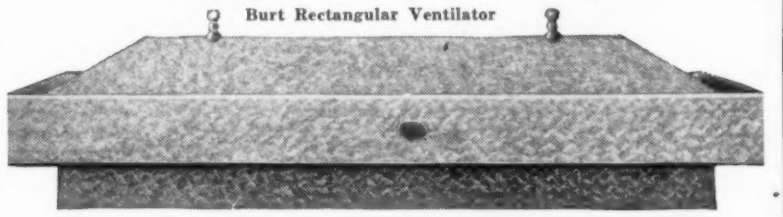
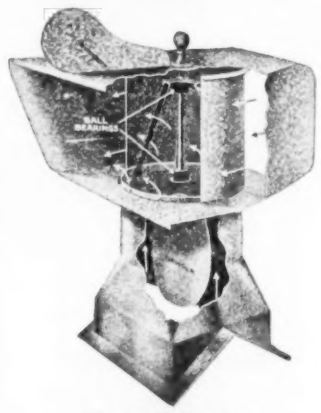
Burt Rectangular Ventilator



PROPER VENTILATION PAYS



Burt Ball Bearing Revolving Ventilator

Burt Ventilators assure the pupils in your schools of an adequate and continuous supply of fresh air—a provision that is absolutely essential to the health and well-being of every child.

Burt Ventilators are recognized as the standard — recommended by the Government and used in schools throughout the country. Burt Ventilators are the result of years of research work — of many experiments.

There are types and sizes to solve every ventilating problem. Every style is scientifically correct.

Ask today for the Burt Book—it will solve your ventilation problem.

THE BURT MFG. CO.
43 High St.,
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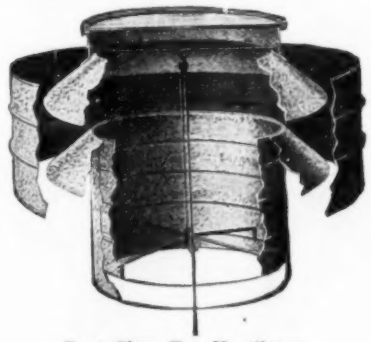


Burt Glass Top Ventilator

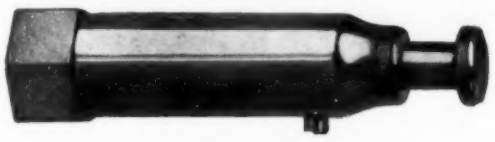
Investigate Palmer's MULTI-SERVICE PRODUCTS

Before you decide on Equipment for Your New Building

Liquid Soap Dispensing Equipment

Individual Dispenser
Guaranteed Five Years

Other types of Glass and Aluminum Non-breakable Construction



Palmer Soap Valve Gravity Tank Systems

Supplies any number of wash basins from one centrally located soap tank.

Valves guaranteed not to leak nor clog; and are positively fool-proof. Cannot be taken apart without tools provided for the purpose. No packing or washers to wear out.

Paper Fixtures

For Towels and Toilet Paper

Palmer Economy Toilet and Towel Fixtures provide an economical service with standard roll paper. Tension device makes it difficult to tear off more than one or two sheets at a time; and lock prevents theft of roll.

Saves 25% on paper expense as compared with ordinary holders.

Send for descriptive literature and name of nearby dealer

PALMER CO.
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Manufacturers for the Jobber
Milwaukee, U.S.A.

Aromazon Air Conditioners

Maintain sanitary and wholesome air conditions in your toilet rooms. No liquid or soiling of walls, etc. Automatic—require no attention aside from inserting Aromazon Disks as needed.

An exclusive feature of the Aromazon permits convenient regulation of results to meet each individual requirement.

(Concluded from Page 160)

—At Pontiac, Mich., the spring vacation has been reduced to bring the close of the year's work on June 18th. The change brings the spring vacation to a midweek date, starting with April first and closing with April 8th, giving three days in each of two weeks.

A system of mid-year graduations has been inaugurated, the first class graduating on January 30th. Members of the class have effected an organization in preparation for class day and other activities in connection with the graduation exercises. Under the new plan, pupils entering school in February, are allowed to maintain their class identity and to complete their work together in a mid-year graduation.

—Upon the recommendation of Supt. David B. Corson, the school board of Newark, N. J., has established a class for children in the city hospital. A group of about fifty children will be taught in a room of the hospital by a special teacher employed for the purpose.

—Nampa, Ida. Regular study supervisors have been employed in place of teachers for taking charge of the study hall work in the high school.

—Oshkosh, Wis. The school board has granted special increases of $100 promised to teachers as rewards for attendance at summer schools the past year. During the summer, 82 teachers attended summer schools and received six or more credits, entitling them to the increases as provided. The board recently rescinded the salary schedule formerly in force.

—Chicago, Ill. The school board has approved a schedule of salaries for junior high school teachers, ranging between schedules for senior high school teachers and grammar grades. The maximum increase provided was $800 a year.

The Milwaukee school board has adopted a report of the special committee on statistics providing for rules governing the duties of the director of statistics. The bureau is henceforth to be known as the Bureau of Reference, Research and Statistics.

It is provided that the duties of the director shall be as follows: He shall have immediate charge of the work of compiling and maintaining continuous school census and of compiling and directing the budget. He shall collect and record such data as the board, its members, officers or committees may require and shall perform such other duties as the board may from time to time delegate to him. He shall have no executive administrative or supervisory powers, but shall have access at all reasonable times to the books and records of the schools and of the several offices.

—East St. Louis, Ill., has a fine, well-equipped opportunity school, which is conducted for the benefit of children retarded in their academic work. Individual instruction largely prevails for the benefit of each particular child. It has eight classrooms, two of which serve as an assembly room. The faculty consists of a supervising principal and five regular teachers. The present enrollment is 75 pupils.

—The small high school, like the small elementary school, according to Harris Hart, state superintendent of public instruction of Virginia, continues an outstanding problem, whether considered from the financial or from the strictly educational point of view.

Mr. Hart shows that one-third of the accredited high schools of the state had enrollments of from 35 to 50 pupils, costing $81.56 per capita, or in other words, the per pupil cost of instruction in these schools was 69 per cent more than in schools with an enrollment of from 200 to 300 pupils. It is pointed out that the small schools do not as a rule, pay large enough salaries to attract teachers of the same preparation and experience as those giving instruction in the large schools; but for this, the per capita cost in the small schools would run still higher. Mr. Hart holds that the per capita cost of instruction in the small schools is not excessive when considered as an item in itself, but the cost is excessive when compared with superior instruction provided at a much lower figure in the larger, better-equipped schools.

The consolidation of high schools, according to Mr. Hart, is very much simpler than the consolidation of elementary pupils, because the pupils are older and they can be transported greater distances than smaller children. The Virginia department of education has adopted a general policy of fewer and better schools which is being applied in a conservative way over a period of years. This matter is of local concern since high schools are financed by the local communities and the homes of pupils are mainly located in these communities.

—The formal dedication of the consolidated school at Fillmore, Mo., was attended by 400 persons. Superintendent C. A. Green of St. Joseph was the principal speaker. Other speakers were rural school inspector F. A. Thompson of Maryville; county superintendent Fred E. Roach of Buchanan county, vice-president of the Missouri county superintendents' association; county superintendent D. D. Hooper of Andrew county; F. L. Skaith, supervising principal of Liberty; Superintendent McCoy, of Savannah; Superintendent Tracy Dale, of Faucett; Guy Ensor, of Oregon, former Fillmore superintendent; Frank Petree, of Oregon and others.

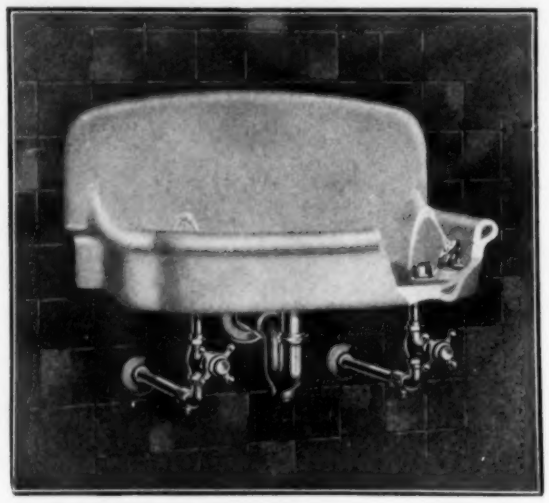
—At Springfield, Mass., the street car company has reduced the fares for school children from six tickets for a quarter to ten for forty cents.

—Pontiac, Mich. Upon the recommendation of Supt. J. H. Harris, the board of education has engaged the part-time services of a psychiatrist, who will devote one-half day a week to the study and testing of socalled "problem" cases in the schools. Dr. I. H. Neff, of Detroit, a trained psychiatrist, has been employed for this work.

Under the plan a complete system of records and reports will be maintained. A follow-up system will be conducted and readjustments of school work undertaken in certain cases.

ASSOCIATION ELECTIONS

—Dr. Charles A. Lory of Fort Collins was elected president of the Colorado Education Association. Miss Anna Laura Force, principal of the Lincoln school, Denver, was chosen from the Eastern division as director of the general association, and F. A. Boggess of Boulder was elected division president. E. C. Cash of Pinon was made president of the Southern division and W. D. Blaine of Glenwood Springs, president of the Western division. Other officers were elected as follows: Eastern Division—Vice-president, W. D. Armentrout of Greeley; secretary, Minnie B. Addleman of Denver; treasurer, Tessie C. Carr of Denver. Southern Division—Vice-president, Clara Jacobs of Pueblo; secretary, W. M. Heaton of Pueblo; treasurer, Faye Reade of Pueblo. Western Division—Vice-president, R. G. Montgomery of Cedaredge;



No. 610

Two part vitreous china wall fountain (13x24 inches) with integral back and concealed hangers. N. P. brass strainer, self-closing stops with either lever or cross handle. Loose key volume regulators. 1¼-inch N. P. brass trap and ⅜-inch N. P. I. P. supplies. Two-stream projector, automatic stream control.

School Boards, Superintendents, Construction Authorities

now recognize Halsey Taylor Drinking Fountains as the ultimate in sanitation. State, educational and welfare bodies have banned the vertical stream. Only side-stream types are today acceptable. And of all side-stream types Halsey Taylor Drinking Fountains are the most sanitary. Old installations are rapidly being replaced by these scientifically designed fountains. And in most new schools going up or planned Halsey Taylor Drinking Fountains are being specified.

The water always remains at uniform height—never too high, never too low—because of *automatic* stream control, an exclusive feature. It is impractical for lips to touch the projector. It is impossible to squirt the water. The installation of Halsey Taylor Drinking Fountains gives you positive assurance of hygienic safety.

HALSEY TAYLOR
DRINKING FOUNTAINS

Only side-stream types are sanitary

THE HALSEY W. TAYLOR CO., 523 N. Park Ave., Warren, Ohio.

NEW YORK SAN FRANCISCO ATLANTA PHILADELPHIA
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Halsey Taylor Fountains are the most practical and sanitary

HALSEY TAYLOR Puritan — *Side Stream Automatically Controlled - Non Squirting - 2-Stream Projector*

secretary, Emma Groom of Grand Junction; treasurer, W. G. Hirons of Grand Junction.

—E. C. Lynn, superintendent of Lee County was elected president of the Iowa State Teachers' Association. James Rae, high school principal of Mason City was elected vice-president.

—W. H. Grayum, superintendent of Puyallup, was elected president of the Washington Educational Association.

—W. J. Bickett, superintendent of Trenton, was chosen president of the New Jersey State Teachers' Association.

—W. Cassius Cook of Welch, superintendent of McDowell County, was named president of the West Virginia State Education Association; vice-president, J. A. Jackson, Clarksburg; treasurer, S. A. Jacobs, Jr. The executive committee will elect the secretary. The meeting for 1925 will be held at Huntington.

—The Hampden County Teachers' Association which met at Holyoke, Mass., with an attendance of 1,300 elected the following officers: President, Wellington Hodgkins, Springfield, vice-president, Miss Mary R. Allaire, Chicopee; secretary, William A. Coving, West Springfield; treasurer, William R. Peck, Holyoke.

—Superintendent C. F. Miller of Galesburg, was elected president of the Illinois Superintendents' Association, Superintendent C. F. McDowell of Bloomington, vice-president; Superintendent John J. Richeson, of Decatur, secretary; Superintendent E. W. Powers, of Fairbury, treasurer; Superintendent R. W. Bardwell, of Rock Island, executive committee.

—The Central Ohio Teachers' Association elected H. T. Main of Delaware as its president. Other officers elected were: F. M. Shelton, superintendent of Springfield schools, vice-president; C. A. Waltz, superintendent of Xenia schools, member of the executive committee, and Lee Dollinger, principal of Sidney schools, member of the auditing committee.

HIGH SCHOOLS

—Mr. W. A. Bass of Covington, Ky., has been appointed supervisor of high schools of the state, to succeed J. W. Brister, who has become head of the West Tennessee Normal School.

—Kentucky has 629 high schools, with an enrollment of 47,700 students, according to Mark Godman, state supervisor of high schools. Of the number of high schools, 492 are public white high schools, 51 are colored high schools, and 86 are private schools. Prior to 1908, there were perhaps not more than fifty public high schools. They were small, enrolling not more than 5,000 pupils. The remarkable growth in the number of high schools and in enrollment has been largely confined to county high schools, of which there are now 236 in the state.

—Moline, Ill. The school board has reindorsed the probation plan now in effect among high school students. The plan provides that any pupil carrying less than the required number of credits because of a lack of interest in his work, shall be temporarily suspended from classes for one semester. No student handicapped by physical disablement or actual inability to carry the work is affected by the ruling which applies only to "loafers."

Following protests from parents whose children were excluded from classes because of deliberate disregard of the scholastic demands, the board as a whole assumed responsibility for the plan and stood ready to defend it against the opposition of parents and students.

As a result of the probation system, the failure list for September and October, 1924, was reduced by half in comparison to that of 1923, according to Principal E. P. Nutting, following the first two months of the trial. The change has not only benefited the pupils but has increased the general average of scholastic work in the several classes.

—Florence, Colo. At the opening of the high school in September, all students of the first-year class were classified on the basis of I. Q. tests. Based on the results of the tests, some students were advised to take certain courses, some were allowed to take only two subjects, and some were advised not to attempt a college preparatory course. Under the new plan it is believed that many high school failures will be avoided.

—A school bond issue of $8,500,000 was carried at Cincinnati, Ohio, by a vote of 84,781 for and 61,990 against. This authorizes the board of education to issue bonds in the sum named during the period of eight years.

—Williamsport, Pa. An $800,000 school bond issue was carried by a 3 to 1 vote.

SCHOOL CONTRACTS IN MINNESOTA

A decision recently rendered by the supreme court of Minnesota settles a question which has been in dispute for several years. It holds that no legal contract can be entered into between an independent district and a superintendent.

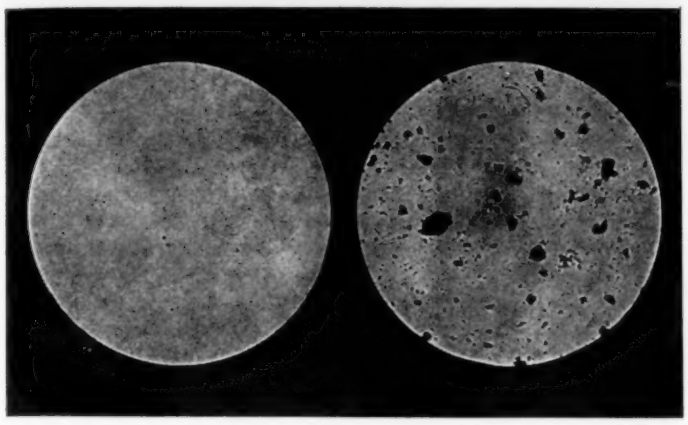
S. M. Pinney was engaged by the school board at Mound for a period of three years. At the end of one year he was dismissed. A taxpayer brought action to restrain the school board from breaking an unexpired contract. The case was carried to the supreme court. This body pointed out that the superintendent's tenure according to the law is that "he shall hold office during the pleasure of the board.

The court says, "the language 'during the pleasure of the board' is susceptible of but one meaning, and that is that the board may discharge a superintendent whenever, in its discretion it wishes to do so." A number of cases are quoted in support. The court says further, "to hold that the contract in question is binding for the fixed term would be to allow the school board to deprive itself and its successor of governmental powers which have been granted to it by the legislature for public purposes. We are led to the conclusion that the Pinney contract for three years is not binding for the fixed term but is subject to recall. He may be employed as superintendent only during the pleasure of the board."

The opinion further holds that while the statute authorizes a contract with a teacher, the superintendent is not a teacher within the meaning of the term as used in the statute. The law regulating the employment and discharge of the one does not relate to the other.

The court also construes the language of the statute which makes the superintendent an ex-officio member of the board without a vote by saying, "he is such member for advisory purposes and to keep in touch with the affairs of the district. He is to be such ex-officio member 'during the pleasure of the board.'"

—Gloucester, Mass. A total of 62 teachers were recently given bonuses of $100 each for outside professional study.



VISUAL EVIDENCE
that REED AIR is Clean Air

THESE two micro photographs tell the story graphically. The one on the right shows the normal dust content in average city air, magnified 60 diameters. Over 80% of this dust is carbon—soot, coal dust, etc.—the remaining 20% comprises road dust, sand, fine particles of metal and other grit.

At the left is shown the small amount of dust in the air after passing through a REED filter. *Reed Air* is clean air—guaranteed 97% free from dust and carbon. Used wherever clean air is required. Facts and figures upon request.

Reed Air

REED AIR FILTER COMPANY
Incorporated
217 Central Avenue, Louisville, Ky.
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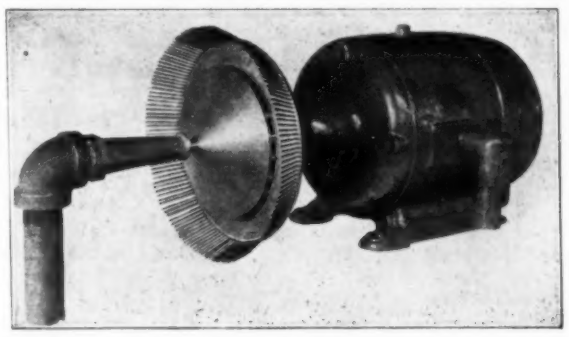

The Turbo Atomizer

The Turbo Atomizer is the heart of Bayley Air Washing Systems. It does away with multiple orifice sprayers which are easily clogged and which produce a spray not altogether free from holes.

It operates with low current consumption and at very low water pressure, throwing an even, finely divided spray radially against the walls of the washing chamber.

THREE TYPES ARE BUILT AROUND THIS PRINCIPLE

TYPE "A"—**For washing and humidfying (cleaning).**
The Type "A" Washer is installed where cleaning is the primary consideration. It uses the water over and over, and removes 98% of foreign matter from the air. Humidity may be added as desired.

TYPE "B"—**For washing and de-humidifying (cooling).**
For cooling air, the cleaning being incidental, Type "B" Washer, consisting of tandem sprays, is installed, and is capable of bringing the temperature of the entering air practically to the water temperature.

TYPE "C"—**For washing without humidifying (drying).**
Where clean air for drying processes must be obtained without increasing its humidity, the Type "C" Washer is installed, using a special washing emulsion.

Bayley Manufacturing Co.
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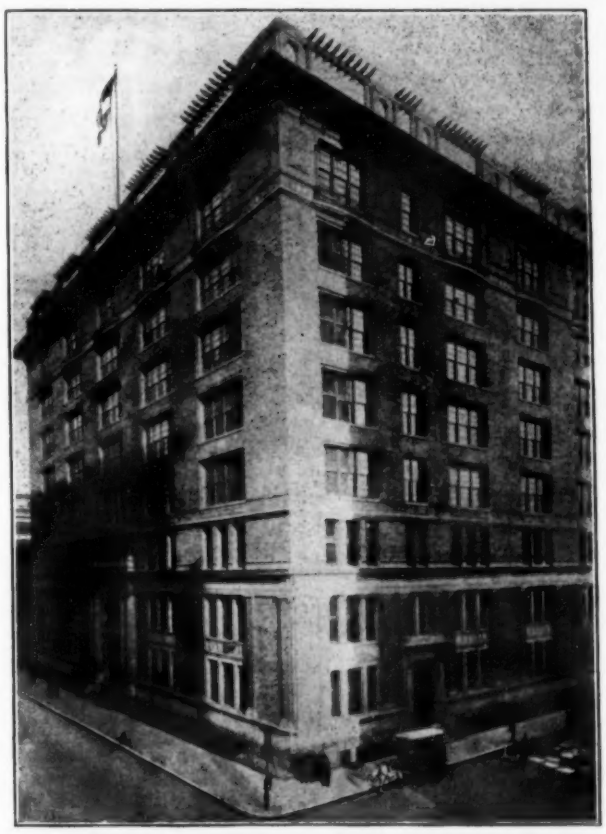
MILWAUKEE

FERALUN
Anti-Slip Treads
for the NEW SCHOOLS

School executives and architects both realize that the safety feature of "FERALUN" ANTI-SLIP TREADS makes them an essential part of modern stairway construction. This fact combined with their durability is what makes "FERALUN" so popular in schools and other types of public buildings.



Washington Irving High School, New York City

A typical "FERALUN" installation is the Washington Irving High School, New York City, shown above, where our stair treads, installed in 1913, are still rendering 100% service. And the story of their efficiency is told in the fact that not one stairway accident has been reported in 11 years of heavy service.

During the past two years 578 schools have been equipped with "FERALUN" Anti-Slip Treads, covering a territory of 30 states.

Write us for names of schools nearest you that are equipped with "FERALUN" treads and inspect them.

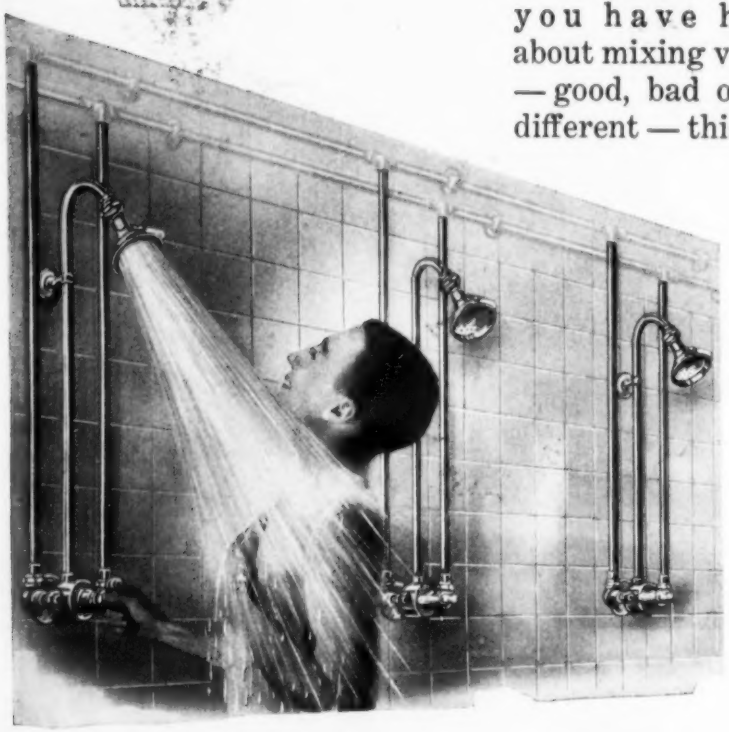
Style "S" Structural Tread Especially Designed for Schools.

AMERICAN ABRASIVE METALS CO.
50 Church St., New York, N. Y.

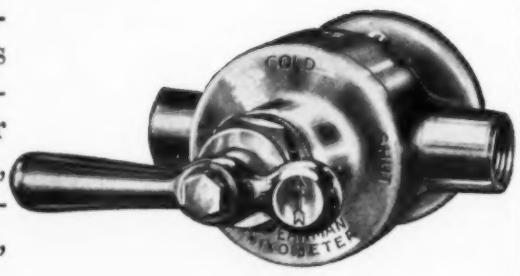
This head uses less water and wastes none

Holes in the Anyforce Head (part of practically all Mixometer Showers) are drilled separately and at the angle that will throw each spray on the bather and not waste it around him or her. Also with the Anyforce Head the bather regulates the water's volume to his or her individual likes — hence none wasted in excess force.

And no matter what you have heard about mixing valves — good, bad or indifferent — this one



the Mixometer, **always works.** It has been used and therefore tested, for years in schools, colleges, clubs, institutions of all sorts, also residences.



We'll gladly send booklet on the Anyforce Head and Mixometer.

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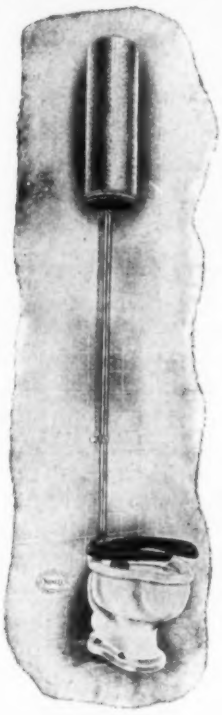

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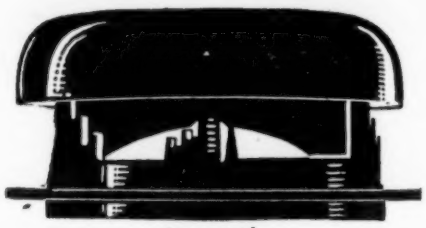

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Marquette University, Shorewood Grade School, Continuation School, Milwaukee, Wis.
Fortuna Grade School, Fortuna, Calif.
Washington Ave. High School,
Green Bay, Wis.
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High School, Janesville, Wis.
Woodland Union High School, Woodland, Calif.

NEW BOOKS

Picture Story Reading Lessons

By Nila B. Smith, under direction of S. A. Courtis. Price, $1.80 per examination set. World Book Co., Yonkers, N. Y.

These reading lessons consist of a group of devices and materials which have been developed in Detroit during a period of four years. A set includes (1) a lesson picture pad, (2) a story book pad, (3) a dictionary or vocabulary, (4) large labels for the teachers' use, (5) a teachers' manual and (6) a container.

With the teacher's guidance the child builds up story pictures and a story book, and in so doing learns to read directions and legends which are essential to the completion of the pictures and of the book. Experimental evidence of the efficiency of the plan and material indicates very high results.

New Methods in Teaching Vocational Agriculture

By G. A. Schmidt, M. S. Cloth, 268 pages. Price, $2. The Century Co., New York.

A carefully arranged discussion of methods of organizing work in vocational agriculture. While we disagree with some of his recommendations, we fully subscribe to the complete and successful plans which he outlines for organizing daily and yearly programs, subject matter, home projects, farm shop work, classroom equipment, and publicity.

Elementary Algebra.

By John W. Hopkins and P. H. Underwood. Cloth, 358 pages. The Macmillan Co., New York.

This book is based on the theory that algebra is a definite branch of mathematical study which for effective educational service, deserves to be studied in high school as a unit. The present edition is a revision of an earlier book and is changed to include certain topics recommended by the national committee on mathematical requirements. The entire work is characterized by unusual clearness and constant effort to induce independent thinking on the part of students.

Safeguarding Children's Nerves

By James J. Walsh, M. D., and John A. Foote, M. D. Cloth, 272 pages. Price, $2. J. B. Lippincott Company, Philadelphia.

Two physicians—one a lifelong student of and lecturer on physiological psychology and nervous diseases, the other a specialist in diseases of children—have collaborated in preparing this handbook of mental health.

For teachers in the cities an understanding of the problems of nervous and mental health is of growing importance. The present book provides in a series of informal, very interesting chapters a practical understanding of types of normal, or nearly normal, children and of the ordinarily available means of upbuilding mental health and checking nervous disorders. The chapters on spoiled children, on discipline, on backwardness, and on subnormal mental capacity, are especially useful, and shed a light on certain phases of the problems of repeaters and other difficult children, which the usual professional teachers' book does not even touch upon.

Brief Guide to the Project Method

James F. Hosic and Sara E. Chase. Cloth, 243 pages, illustrated. Price, $2. World Book Co., Yonkers-on-Hudson, New York.

The practical portions of this book, which discuss means of employing the project method and enumerate and describe actual projects, appeal to us as most useful. The theoretic discussion is rather extravagant in its claims for the method. To say, for example, that it is the only way of cultivating effectively citizenship, moral character, ideals, would hardly be admitted by any experienced educator.

Junior High School Mathematics

Third course. W. L. Vosburgh, F. W. Gentleman, and J. O. Harsler. Cloth, 12 mo. The Macmillan Co., New York.

This revised edition of a successful book carries the third year classes through the more advanced topics of elementary algebra and introduces them to the first principles of plane geometry.

Graphic Aids in Occupational Analysis

By Clyde A. Bowman. Cloth, 104 pages. Price, $3.75. The Bruce Publishing Co., Milwaukee, Wisconsin.

The task of preparing children to enter occupations involves two main steps; guidance and teaching. It also involves a preliminary step which is a basis for the other two—analysis. Without a knowledge of the areas of education and occupations; without a clear idea of the opportunities, the organization and relations of occupations, their processes and requirements; without thorough appreciation of the knowledge, skills, and attitudes which the schools must provide to prepare for occupations—without all these things it is practically impossible to guide pupils or to teach them adequately.

The present book is a discussion of the analysis of education and occupations by the graphic method for guidance and teaching purposes. Principles and methods as these apply to junior and senior high schools, to part-time and all-day vocational schools, to night schools are quite fully presented. Nearly fifty charts illustrating analyses of typical courses and typical trades are included to show how each local situation may be studied and how guidance plans, courses, and lesson materials may be fully developed.

Educational Supervision

By Charles Edgar Scott, A. M. Cloth bound, 98 pages. Published by The Bruce Publishing Co., Milwaukee, Wis.

The author has brought to his service the best thought of the day on supervision and lifted into clear and concise terms the underlying principles of guiding terms governing the same. The book is designed to serve principals, supervisors, superintendents, and members of classes in teacher-training institutions. It is primarily a contribution to the science of supervision by way of a better integration of the theory of supervision.

The author provides a clear exposition of the continuity, economy, development and operation of supervision. He also presents a complete bibliography.

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Story Hour Readers Revised

By Ida Coe and Alice Christie Dillon. Primer, cloth, 128 pages, illustrated. Price, 60 cents. Book One, Cloth, 128 pages, illustrated. Price, 60 cents. Book two, Cloth, 204 pages, illustrated. Price, 72 cents. Book three, cloth, 240 pages, illustrated. Price, 76 cents. Teacher's Manual. Cloth, 272 pages. Price, $1. American Book Co., Chicago.

Here is a set of readers in which both authors and publishers have contributed their best. The word "revised" employed in the title merely emphasizes the fact that the authors have in this new edition recognized the latest thought in the teaching of reading, namely, emphasizing the idea method. The pupils are urged to read complete lines and phrases rather than individual words.

The primer deals with simple stories in rhyme, introducing Mother Goose, Humpty Dumpty, Little Jack Horner, Bo Peep, and the many child favorites. Book one widens the range of interest, reciting delightful fairy tales. Book two wanders into new and strange lands and introduces stories of a wider scope about animals, boys and girls in which the spirit of adventure asserts itself. Book three brings before its readers the Indian, seafaring men, and princes through the medium of attractive stories.

The manual which accompanies the series of readers is prepared for the use of the teacher. Every lesson and every phase of the lesson, is intelligently treated from the standpoint of sound pedagogy. The entire series, with the exception of the manual, is attractively illustrated.

The Number Combinations

By Frank L. Clapp, assisted by Bernard P. Huebner. Paper, 120 pages. Bulletin 2. University of Wisconsin, Bureau of Educational Research. This is the first study presented to the public by the new Bureau of Educational Research of the University of Wisconsin. It discusses a complete analysis of the relative difficulty of number combinations of some 7,000 students and an analysis of their appearance in several widely used textbooks. A summary of the study specially adapted for classroom teachers has been separately printed.

Lettering Exercise Manual

Jonathan Bright and J. F. Faber. Paper, 64 pages. Price 45 cents. Bruce Publishing Co., Milwaukee.

This is the third of a series of lettering manuals. It affords carefully graded exercises in vertical gothic letters used commonly by mechanical draftsmen.

The Public School Debt in Illinois

Geo. W. Willett. Paper, 97 pages. The Macmillan Co., New York, N. Y.

This is a part of the study of the school finances of Illinois, conducted under the direction of the Educational Finance Inquiry Commission, and limits itself to a statement of the bonded and floating indebtedness of the several school districts.

The total bonded indebtedness of the several units of government in the state of Illinois is fixed at $35,491,232. This represents $5.30 per capital, or $35.93 per pupil. The report concludes that there is little liklihood of default or repudiation on Illinois school bonds, except as individual districts ultimately may find it impossible to pay. Steady decreases in population and in property valuation may make such a contingency quite probable. On the whole the prospect for ultimate liquidation is quite favorable.

In Storeland

By Margaret E. Wells and H. Mary Cushman. Cloth bound. 200 pages. Published by Silver, Burdett & Company, Boston.

This is the first of a series of children's books devoted to clothing and notions. The materials which go into fabrics are described, their origin attractively told, and the process of production related. Thus, instructive things are told about silk, cotton, linen, leather, fur, and the like. The student is taken to the farm, the workshop, and the store. He learns something about raw materials and about the finished product.

Teaching Junior High School Mathematics

Harry C. Barber. Cloth, 12 mo. Price, $1.20. Houghton Mifflin Co., Boston.

The spirit and the aim of the newer method of teaching mathematics is summed up in a fable which closes the final chapter of this book. It is related that three teachers were asked to teach three boys the use of the hammer. One proceeded with an academic study of hammers, their types, the materials, the uses of the several types, etc., etc. The second handed his boy a hammer and told him to go to work. The third discovered that his boy wanted to make a boat and proceeded to help the boy, showing him patiently his mistakes, guiding him in right usage. At the end of the lesson the first boy knew all about hammers, but could not drive a nail properly; the second had mashed his finger; the third had a practical working knowledge suited to his work.

Just how the new teaching of mathematics in the junior high school seeks to give each child a practical working knowledge suited to his needs, his abilities and his age is the subject matter of this book. For the practical teacher there is much useful information on aims and methods and suggestions for courses of study.

Pride and Prejudice

By Jane Austin. Cloth, 159 pages. Price, $0.60. Longmans, Green & Co., New York.

The editor has done a splendid bit of work in abridging this old favorite to 152 pages, without in any way destroying the completeness of the story, the delightful character drawing, or the delicate touch of the original text. The introduction is ample and appreciative of the author and the notes are quite complete. The whole book is done with the usual care and discrimination of a Longmans book.

—An interesting case was recently decided at Chippewa Falls, Wis. The school board of that city had established a rule that a child must be 6 years of age before being promoted from the kindergarten to the first grade. William King, Jr., an unusually bright child, was recommended for promotion by his teacher. The promotion was denied because the child lacked twenty days of the required age. The board held that it must hold to rules in order to secure regularity in the conduct of the schools. The parent appealed to the courts with the result that the judge ordered the promotion of the child.

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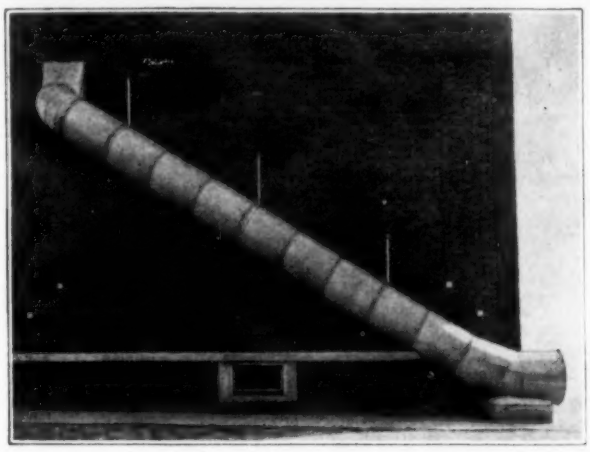

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THE constantly broadening character of the service rendered by the modern school makes necessary the flexible and economical use of floor space which Wilson Rolling Partitions provide. New classrooms may be added as desired and small meetings or night classes held in rooms suited to the attendance, thus saving heat and light. Adaptable to old buildings as well as new. They may be provided with blackboard surface where required.

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A SCHOOL BUS DRIVER'S CONFERENCE

At Easton, Maryland, under the direction of County Superintendent Oscar M. Fogle, the subject of school bus service has come under consideration with the result that "parents need no longer watch their children board school busses with a touch of anxiety."

While no serious complaints had been made by parents and no accidents had occurred, it was believed by the county board of education that the service could be placed upon a better basis of safety and expedition. Consequently a conference of drivers of school busses was held at which every phase of the service came under scrutiny. An account of the conference notes the following:

All the contracts between drivers and the board give the drivers the same authority over children in transit that the teachers exercise in school. This is necessary to maintain discipline and good order, as well as to insure the safety of the children.

It was agreed that while enroute, children should not be required to be statues. They should be permitted to talk and even to sing, if they wish. They have a right to be happy while in the bus, but this does not mean that they should scramble and tussle and throw hats out the windows.

The subject of railroad crossings was also taken up. While there are not many grade crossings in the county covered by the bus routes, there are a sufficient number to be considered. Busses should always come to a full stop before crossing railroad tracks.

The following rules are to be observed: To have the busses clean at all times; to have all rules obeyed; to keep busses free from smoking and chewing tobacco; to be free from all bad language; to prevent children from moving around in the bus.

The cost of transportation in Talbot County has mounted steadily from year to year. This has partly been brought about from closing rural schools and partly from transportation of high school pupils. In many counties, high school pupils pay for their transportation. The Talbot members of the legislature in 1922, however, had a local law passed, requiring the county to pay transportation of high school pupils in sections where elementary pupils were transported. This added about $2,000 to the cost of transportation the first year.

Other sections of the county, not readily accessible to high schools, demanded similar conveniences for their children. The first bus conveying only high school pupils was started from Neavitt in 1921. Since then, similar service was instituted from Bruceville and Claiborne. These, with the transportation lines already in existence or since started, have brought high school advantages within reach of every child in the county. No child now need walk or drive over three miles to reach a high school.

Although consolidation and transportation have grown steadily in this county, it has not moved as rapidly as some other counties of the shore. A part of Superintendent Fogle's annual report of Caroline County for last year is typical of what is being done elsewhere.

Consolidation of Schools

"It is, indeed, gratifying to note the rapidly increasing sentiment in our county for the larger school. The people generally have awakened to the fact that one teacher in a school, dividing her time among six classes, cannot be expected to do the work of a teacher who has fewer classes and more inspiration.

"This year, fourteen school busses and wagons are carrying nearly four hundred children daily to and from school. Most of these routes take the place of schools which have been closed and thus the cost of the transportation service is met by the saving effected in closing the schools.

"About fifteen years ago, the school board of Talbot County, which was the first on the eastern shore and one of the very first in the state to begin consolidation, had to win three decisions in the Maryland court of appeals to justify its claim before the people. Now our residents are claiming their rights in consolidation. Cannot we truly say that public sentiment has undergone a great change?

"Teachers in two and in three-room schools can do good work and keep fairly apace with the larger schools in most subjects, but the little one-room school seems doomed as fast as good roads allow consolidation."

The most recent school in this county to be closed was Kirkham. The elementary children are carried to Royal Oak and the high school children to St. Michaels. This was part of a plan to relieve the congestion at Easton, as many of these pupils have been coming to Easton in past years.

The other lines in the county are:

Bus Route	Driver	Distance	Type of Road	Number of Children	Cost
Peach Blossom and Bailey's Neck to Easton	Jas. A. Stewart, Jr.	6 14 6.4	State and shell	41	$1,400
Dover Road and Square Farm to Easton	Clinton McS. Henry	8.4	State	50	1,500
Leeds' Creek and Tunis Mills to Easton	Lee Stewart	14	Stone, shell, dirt	30	1,000
Kirkham and Royal Oak to Royal Oak and St. Michaels	J. Norman Marshall	..	State and cinder	24	800
Bellevue to Royal Oak	Wm. F. Seymour	..	State and cinder	19	550
Neavitt and Bozman to St. Michaels High.	W. A. Bridges	11 mi.	Shell	16	1,000
Wittman and Claiborne to St. Michaels	McDaniel Supply Co.	16 11	Shell and State	44	1,700
Island Creek Neck to Trappe	Mitchell H. Hart	12	Dirt	21	1,000
Bolingbroke to Trappe	Campbell Hughlett	12	Shell	21	900
Hambleton, Bruceville and Upper Bambury to Trappe	Albert T. Stevens	19	Shell and State	57	1,400
Oxford Neck to Oxford	Henry Wilcox	8	Shell	18	550
Skipton and Wye Landing to Wye Mills.	L. A. Callahan	13	State	25	1,000
Sherwood and Bar Neck to Tilghman	Percy W. Harrison	10 12	Shell	80	2,100

—Seymour, Conn. The high school has this year introduced a project in supervised study. The day is divided into six fifty-minute periods, with the first thirty minutes spent in recitations and the last twenty in supervised study. With this supervised study, one or two free study periods for each teacher, and one of home study, it is expected that a high standard of preparation will be maintained. The high school has graduated 101 students in the past three years, 52 of whom are now enrolled in higher schools of learning.

HOW TWO PRIMARY TEACHERS MADE THEIR CLASSROOMS BEAUTIFUL

Elizabeth Vernon and Beatrice Hayes, Teachers in the Winnetka Public Schools, Winnetka, Illinois

Introductory Note

Last year we built an addition to one of our grade buildings. The two first grade teachers came to me and asked if they might plan the decoration and furnishing of their own rooms. When I saw that they had a definite plan, I allowed them entire freedom, with surprisingly attractive results. Although I had to have their furniture made to order, the total cost of equipping each room was considerably less than that of equipping my standard classrooms. No visitor ever sees these two primary classrooms without exclaiming at their unusually artistic and homey feeling. I am sorry that the photographs accompanying this article do not give any idea of the bright, yet soft, coloring, which on the ivory background of curtains and tables adds warmth and life.—C. W. Washburne, Superintendent, Winnetka Schools.

Whoever has taught double session for two years, even with the most delightful of co-partners, would appreciate the zest and enthusiasm with which we greeted the approaching completing of the new addition, and the furnishing of our rooms. In fact we began furnishing them before the plaster was on the walls and the floors in.

We had asked Mr. Washburne to have small individual tables, 18"x24", for our children, instead of the customary movable desks. He had the school architect sketch the plan of these tables, according to our dimensions, then had them made to order at a mill. The plan is shown herewith. These tables cost $8.50 apiece. The little chairs that went with them were the regular Mosher kindergarten chairs which cost $1.67. This made the table and chairs together cost $10.17, as against $11.00 for the usual movable chair desk.

We painted the tables and chairs ourselves. Dashing down to the basement at 11:30 each day, we donned apron and gloves and became painters. Two-thirty found us once more with paint brush in hand, and in time the first coat on all the tables was finished. The second coat of flat white paint went on more rapidly and with more ease, and at last they were ready for the ivory enamel (Valentine's Valspar enamel).

The chairs were done in the same way, and then came the question of our own desks. We could not put varnished oak desks into rooms of ivory and gray-green. So we secured permission to paint these. First the varnish had to be thoroughly sandpapered, then the three coats of paint put on.

During this time we had talked often with the children about their room. They loved the tables and begged to help. We took them in little groups, and they helped us sandpaper the tables after each coat of flat white paint. The children also helped with our teachers' desks.

A BEAUTIFULLY EQUIPPED FIRST GRADE ROOM, WINNETKA, ILL.

The children went with us to see the rooms as soon as possible and discussed with us the placing of the furniture and the hanging of the curtains and pictures. We brought samples of material to them, and tried the material with our woodwork and walls—whether it was too light in weight or too heavy; would it keep the light out, or just shade our eyes from the sun when it became too strong? We made arithmetic lessons of figuring the expense of the curtain material.

Through the children we secured the interest of the mothers, who bought the curtains for us, and helped us in the making of them. The material on which we finally decided was casement cloth with a valance and six-inch band of a charming cretonne with rose-colored background, and quaint Mother Goose children in blues and yellows that harmonized beautifully with our sunny, buff walls.

Each of us was fortunate in securing a bench for her room. One of us found a seat of graceful lines, 62 inches long, with arms and a high back, in the garden furniture section of a Chicago department store, and painted this to fit in with the rest of the furniture. The other of us was more fortunate, having found a discarded bench with many possibilities, belonging to one of the mothers. These benches were covered with cushions of the same cretonne that was used on the window curtains. Under each arm we tucked in a rose and blue pillow for coziness and splash of color against the ivory.

We found attractive pictures, such as the illustrations of songs children love, and picked up here and there bits of pottery that would be useful to hold bulbs and flowers, and add a touch of color. On the cork panel above the blackboards we put some lovely Mother Goose pictures of Jessie Wilcox Smith's.

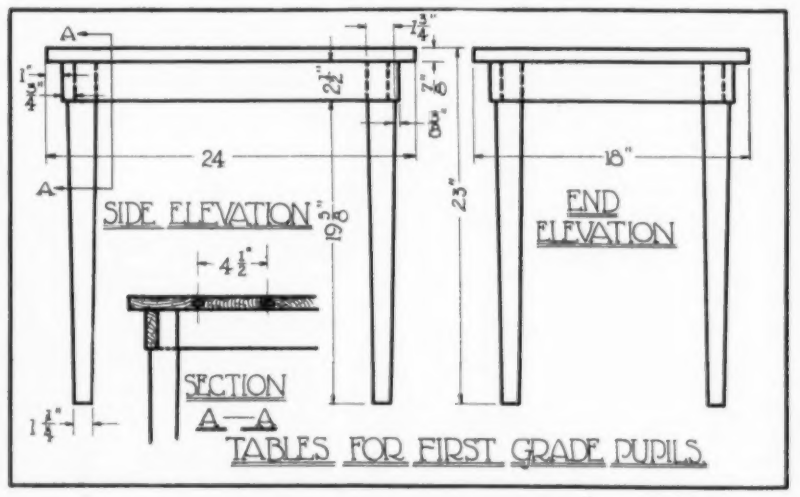
Through some of the mothers we secured hanging baskets with graceful ferns and other growing plants. One of us got a bowl of gold fish and placed it on a little table in a sunny, attractive corner, where a few children might sit quietly to read, while the others were working with various materials.

Each of us secured a rather large, low table, which we painted like the rest of the furniture, and on which we placed books for the children to read, and some growing, blooming bulbs.

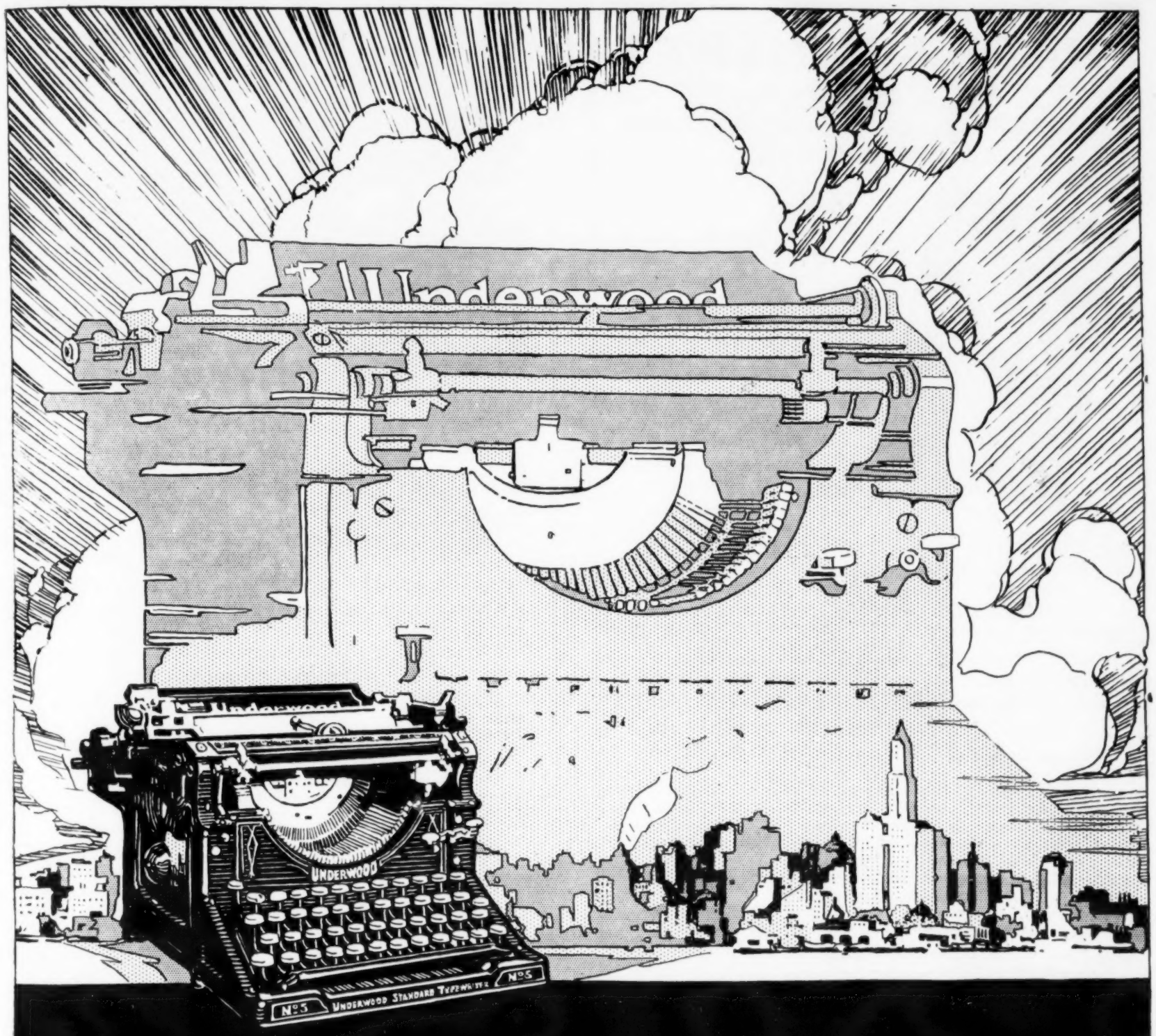
Again and again each of us would stand in one end of the room, in the doorway, or in various parts of the room to look about at the walls, the pictures, the tables, the curtains and hanging baskets, to be sure that the effects were harmonizing and pleasing. We invited the

(Concluded on Page 174)

ANOTHER VIEW OF THE FIRST GRADE ROOM, WINNETKA, ILL.



DETAILS OF TABLES FOR THE FIRST GRADE CLASSROOM AT WINNETKA.



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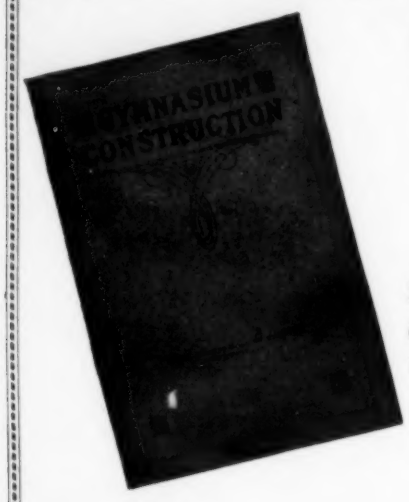

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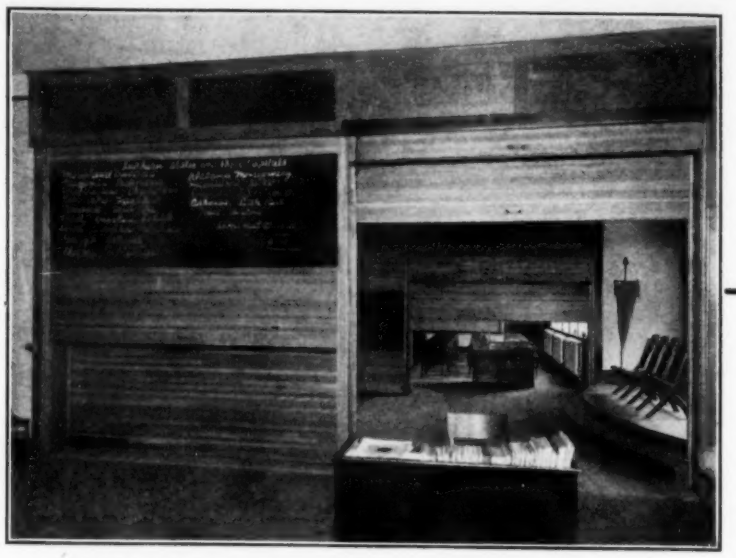

Riverside High School, Wichita, Kansas Lorentz Schmidt, Architect

FLEXIBILITY

The installation shown above is a good illustration of the flexibility which may be had in a school plant by the use of ACME ROLLING PARTITIONS.

In this particular instance the center one of three rooms is used for study purposes. Recitations are held in the rooms on either side at the same time. When space is required for general assembly the partitions are rolled up out of the way and the posts removed—the entire operation taking but a few moments.

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(Concluded from Page 172)

children's criticism and suggestions, so that the finished rooms were theirs as well as ours.

This fact has helped in keeping the rooms attractive. One of the first questions visiting teachers ask us is how the little tables are kept clean. Every child has his own sponge and pan, and once a week they all wash their desks with soap and water. They enjoy doing it, and take pride in keeping the room attractive.

As a protection to the desks we had the children make little brown burlap covers, which they embroidered with bright colored yarns, according to their own individual fancy. These covers are placed on the desks when the children are handling materials, such as colored crayons, that would be likely to cause trouble.

One of the visiting teachers has spoken of the fairy-like appearance of these rooms. The children really love them. A few days ago a little girl, on waking up in the hospital after a tonsil operation murmured, "Oh, mother, if I were only back at my little white table."

PUBLICATIONS

Suggestions on Schoolhouse Planning. Bulletin No. 700, February, 1924. Prepared by Dr. H. L. Smith, of the Division of Schoolhouse Planning, Indiana Department of Public Instruction, Indianapolis. The pamphlet is intended to serve as a means of information to school officials responsible for school building programs. It attempts to offer the general characteristics of an adequate school building, to indicate the necessary steps in putting such a program into execution, and to set definite standards applicable to different features of school sites and buildings.

Secretary's Annual Report for the year ending June 30, 1924, for the public schools of Tacoma, Wash. The report discusses in brief the receipts and disbursements of the schools, the revenue and expense, the bonds and buildings, and new sites and buildings.

Douglass Standard Diagnostic Tests for Measuring Achievements in First-Year Algebra. By H. R. Douglass. Publication of the University of Oregon, Eugene. The pamphlet discusses the theory underlying the construction of the tests, revision and reliability of the tests.

Nutrition Work for Preschool Children. By Agnes K. Hanna. Bureau Publication No. 138, Children's Bureau, of the U. S. Department of Labor. The report of an analysis of the findings of a field study made by the Children's Bureau in January, February and March, 1923, of the methods of conducting nutrition work for preschool children in nine middle-western and eastern cities. All of the cities selected had some definite and organized work for preschool children. The pamphlet discusses the general plan of work of the organizations studied, the types of work attempted by a preschool center, standards for selection and care of children, and factors entering into the success of nutrition work.

The Use of the Question in Classroom Instruction. By Charles W. Odell. Educational Research Circular No. 29, September, 1924, issued by the University of Ilinois, Urbana. The pamphlet discusses such topics as means for stimulating questioning by the class, guiding pupils in formulating suitable questions, use of development and informal questions, and the prerequisites of good questioning.

A Digest of Laws Prohibiting the Use of the Common Drinking Cup. Issued in October, 1924, by the General Health Bureau, 542 Fifth Ave., New York, N. Y. The standard railway code prohibiting the use of common drinking cups was passed in 1920, and is at present in force in 34 states. The present pamphlet has been prepared to show that in the fifteen years which have elapsed since the primary agitation, various omissions in the laws of the states have been overlooked or neglected. Most of the laws were passed before the Volstead act and have not been revised to apply to the growth of soda fountains. The present purpose of the sanitarians and public health workers is to secure enforcement of the existing statutes, to obtain the zealous support of health officials, and to seek amendments to the existing laws that will make them uniform with best legislation, applicable to new conditions, and drastic enough to make the public parties to compliance.

Score Card for Recording Estimates of Teaching Ability. Prepared and issued by the New York State College for Teachers, Albany, N. Y. Contains space for recording the personality of the teacher, and estimates of teaching ability as indicated by recitations, character of teaching, discipline, knowledge of subject matter, and scholarship.

Visual Education Departments in Educational Institutions. A. P. Hollis. Bulletin No. 8, 1924, U. S. Bureau of Education, Washington, D. C. This study was begun to find out the existing practices in schools, to permit comparisons among them, and to use these facts as clues for establishing the most desirable types and standards. Only ten institutions reported on subjects in which correlation was attempted. Agriculture led the list with six mentions, while three institutions reported correlations in all subjects. The correlations were usually planned by the principal or teacher of the local schools; six institutions reported that their visual instruction departments assisted. It was brought out that films are used for three different purposes: (1) for classroom instruction, (2) for school assemblies, and (3) for community assemblies. Of eleven institutions reporting, four used text films and the rest used general educational films. Of thirteen institutions reporting on kinds of films used most in the assembly room, nine reported general educational; one text and general educational; two general educational and entertainment; and one industrial and entertainment. Of the fifteen reports, eight reported films were most used, four slides, two films and slides, and one other pictures and charts. Only two groups of educational plants have instituted organized distribution of visual aids to schools. These are: Larger city school systems and state institutions.

—The New York City board of education has chosen a site for a new high school which will cost $500,000. It is located on Fifth Avenue between 104th and 105th streets. It constitutes a square block.

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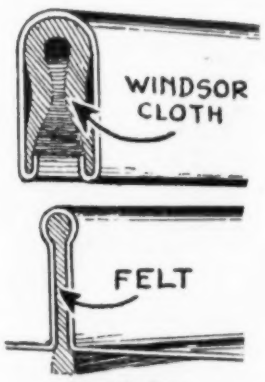

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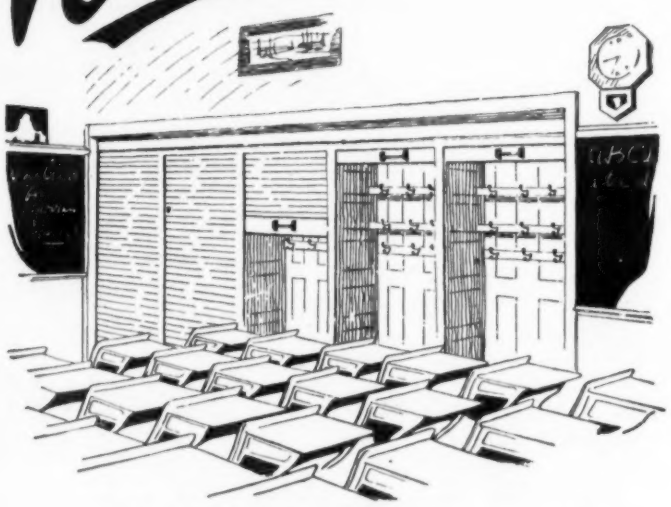

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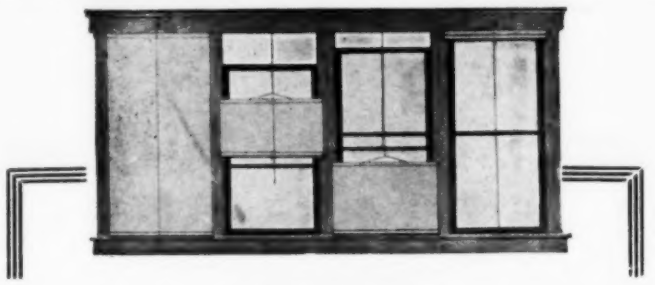

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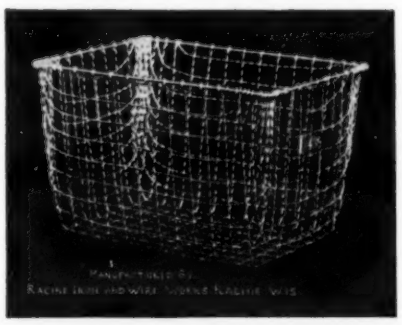

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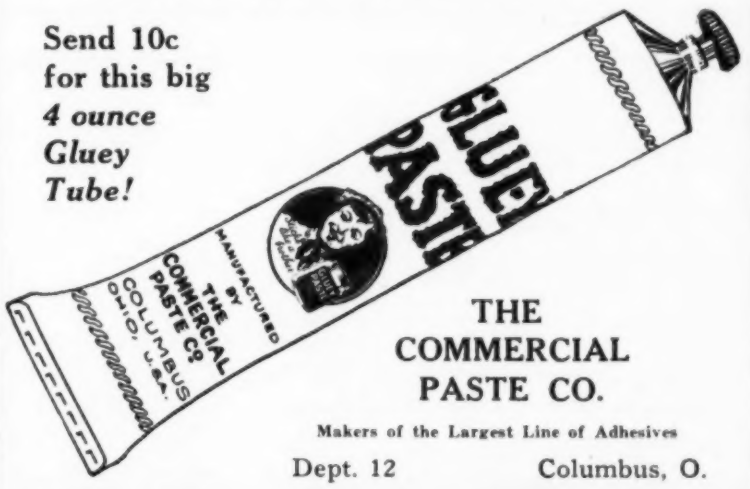

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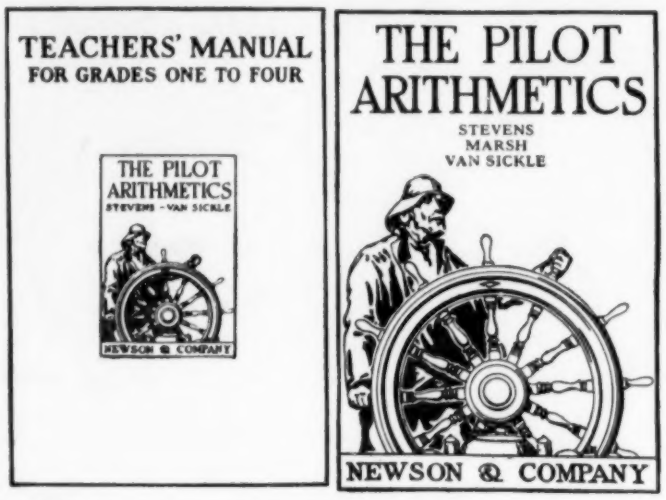

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HYGIENE AND SANITATION

The Eye-sight Conservation Council of New York City reports that from tests of 483,154 school children in nineteen cities the reported percentages of total eye defects, corrected and uncorrected, varied all the way from 3.5 per cent to 58 per cent, and averaged 21.9 per cent.

A city in New Jersey reported 3.5 per cent of its school children with corrected and uncorrected eye defects, a city in Missouri 7 per cent and a city in New Hampshire 6.7 per cent. At the other extreme, a city in New York reported 40 per cent, a city in Louisiana 50 per cent and a city in Maine as high as 58 per cent.

—"If the major portion of our school population while in school could have the advantage of adequate open window ventilation, a definite step forward would have been taken in our public health program." This declaration was recently made by the health department of New York City. "It is becoming more and more apparent," the bulletin explains, "that the establishment of a large number of open window classes, as contrasted with the open-air classes, would be of more distinct value to the school system, in that a much larger number of children could thus benefit than the open air classes can even hope to reach. Fresh air is apparently a stimulus that is required to establish and maintain good health."

—Fulton, Mo. The school board has approved a plan suggested by the physicians of Callaway County, whereby the Schick and Dick tests will be administered free to all school children who apply for the tests. A free clinic was held at the local hospital where parents were permitted to bring their children for the tests.

—A part-time health worker has been employed in Taylor County, Florida. The health worker has administered hook worm treatments, vaccinated pupils against typhoid fever and smallpox, and has obtained the services of physicians in removing diseased tonsils of school children. In addition, the buildings and grounds are more adequately supervised, and considerable attention is given to health teaching in the schools.

—Winona, Minn. The school board has recommended that parents have their children vaccinated in accordance with the suggestions of the city health department. The measure was advocated as a preventative measure in the face of a possible epidemic of smallpox.

—Hackensack, N. J. The school board has planned to continue the Schick treatment for diphtheria. The schools have for the past several years given the treatment with the aid of the medical inspectors and nurses. All parents are asked to sign written notices to the effect that they permit the treatment.

TEXTBOOK NEWS

Longmans, Green & Company, New York, recently celebrated the two hundredth anniversary of the establishment of the firm. The company which was formed in 1724 boasts two hundred years in one family, two hundred years in a span of five generations with the sixth now entering the business, two hundred years in the same location in Paternoster Row, and two hundred years of steady prosperity and growth connected with literary events of great importance.

The beginning of the business goes back to the apprenticeship of Thomas Longman in the book business of John Osborn, who had himself been apprenticed earlier to Thomas Guy. Longman was 17 years of age when he entered business in the year 1716. In 1724, when his apprenticeship was up, he inherited some property from his family which enabled him to buy the bookselling business of William Taylor, in Paternoster Row, and at that same site, then acquired, the firm has been a continuous occupant ever since. With the Taylor business he took over the publishing rights of Robinson Crusoe, which Taylor had first issued five years before.

The American branch of the firm was established in 1875 and was converted into a separate business in 1889. The educational department, of both the American and the English houses, has been a strong factor in the development of the firm's lists.

THE BERKELEY SCHOOL BOND FAILURE

The school building program of Berkeley, California, involving several million dollars and presented to the public in the form of a bond issue election, met with defeat. The school bond deferment committee of the school board headed by Mrs. Robert Hector has now concluded that the public must be presented with a construction program and business administration that rests upon a sound business basis. It comes forward with the following recommendations:

"1. That a survey be made, by an agency acceptable to all concerned, to include:

(a) A complete study to present school buildings, in relation to the demands of the present and immediate future.

"(b) The probable development of school needs in the various school districts within five, ten and fifteen years respectively.

"(c) A comprehensive plan for the development of the entire school building program for the period covered by the survey, so that construction may be consistent and progressive.

"d. A comprehensive financial program appropriate for the gradual working out of the above mentioned building program.

"2. That no construction of any kind be authorized until such a survey has been made.

"3. That consideration be given to the employment of a full time school architect, and that consideration also be given to the standardiza- of schoolrooms and school equipment.

"4. That a study and evaluation be made of all real estate holdings of the board of education not now used for educational purposes, with a view to the possible disposal of same to meet immediate school needs.

"5. That a study be made of our school administration and business management, for the purpose of introducing every possible economy and safeguard.

"6. That the reports and records of the school administration and business management be so assembled and organized that the facts may be available to the Public at any and all times.

"7. That careful consideration be given to the merits of the direct tax method of financing school construction as compared with the bond method, with a view to placing our school construction program on a 'Pay as we go' basis at the earliest possible date.

"8. That it become the established policy of the board of education to forbid the participation of any of the board's employees in any election campaign.

"9. That the board of education adopt a policy which will prohibit the use of school children in all election campaigns, which will eliminate the use of moral coercion designed to force such participation and further, which will eliminate the penalizing of children who refuse to take part in such activities.

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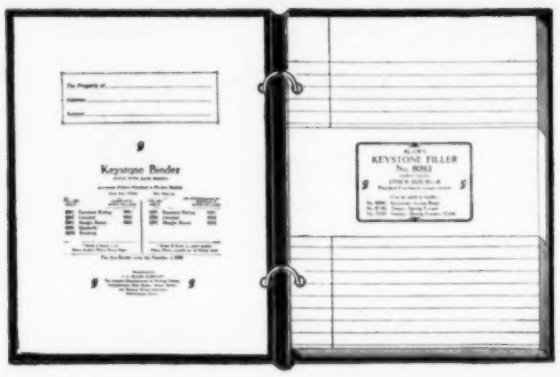

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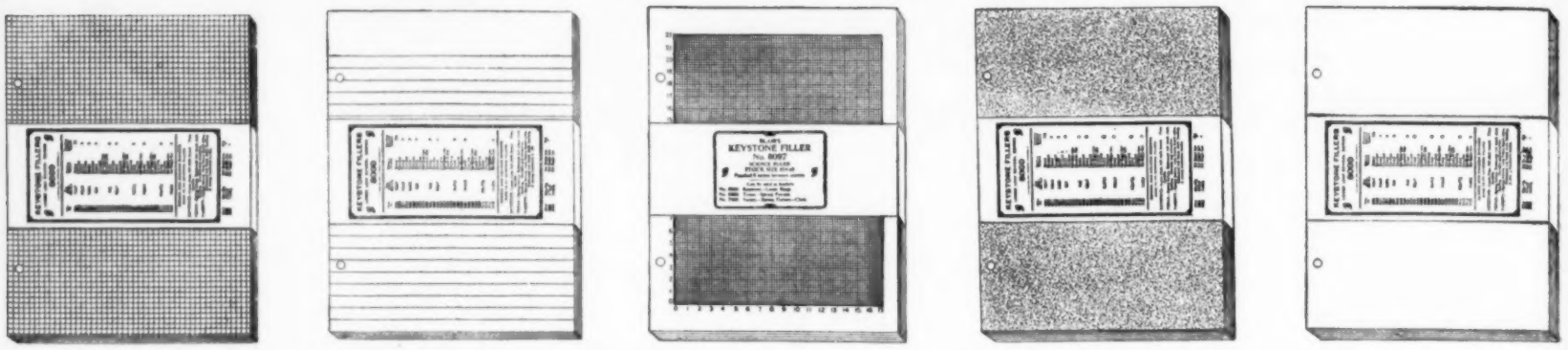

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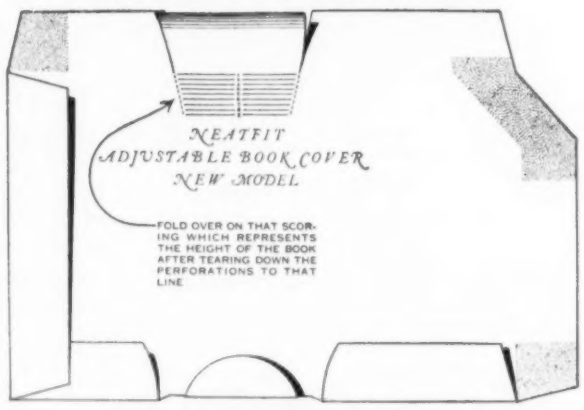
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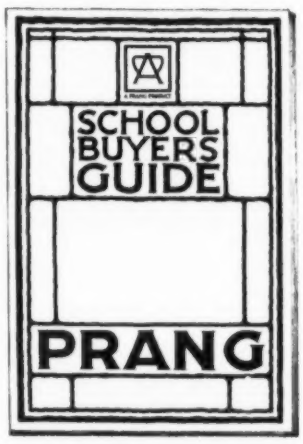

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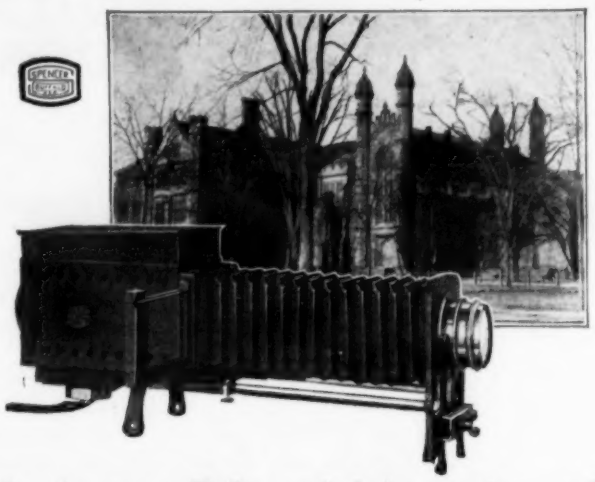

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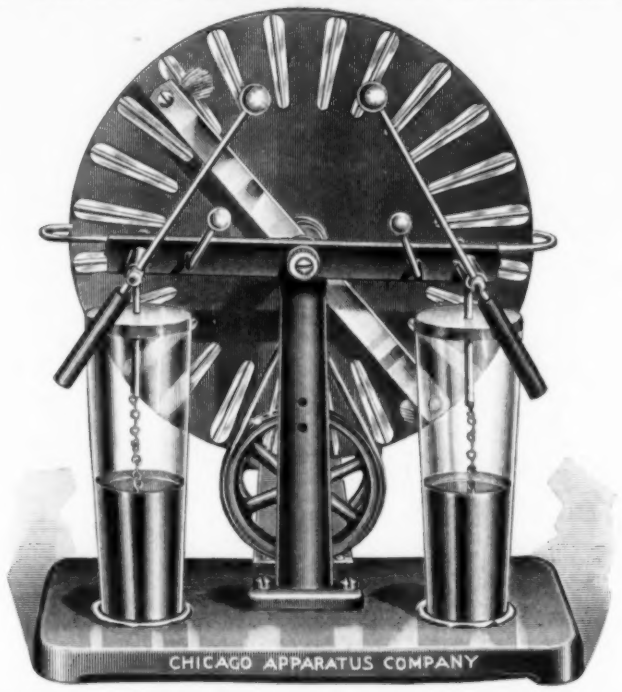

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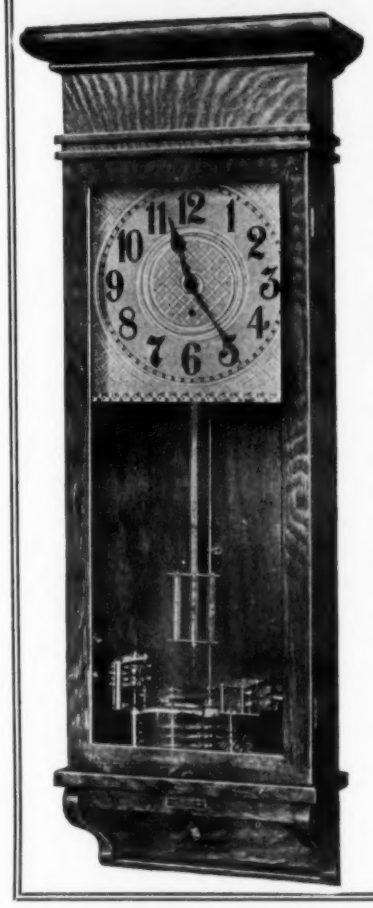

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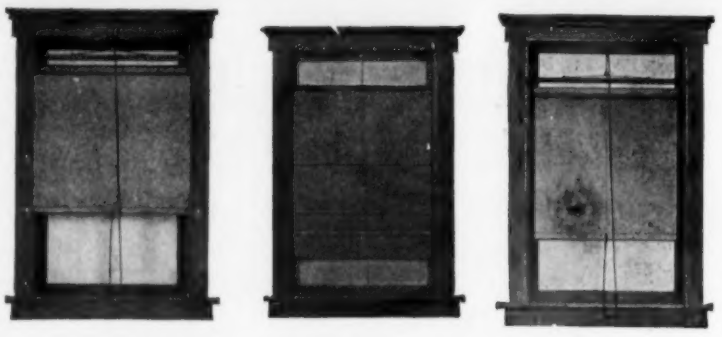

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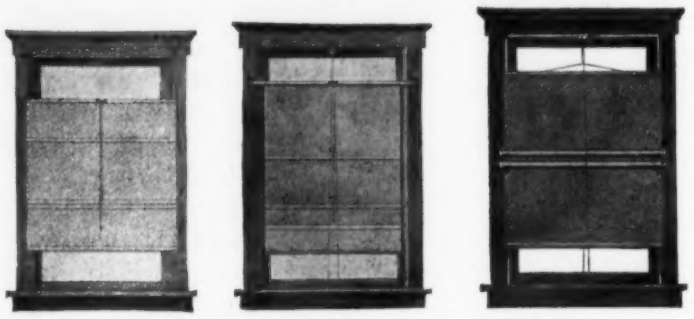

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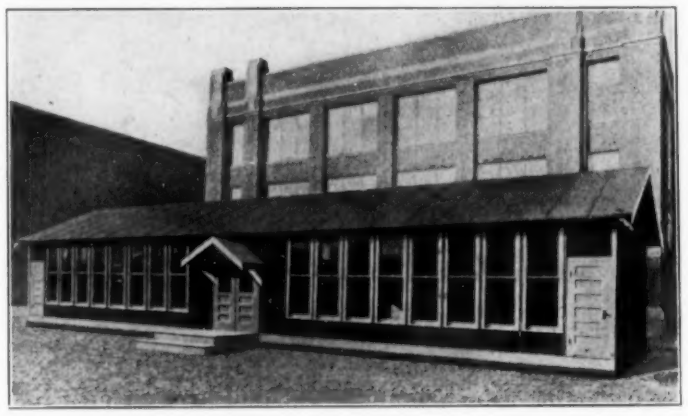

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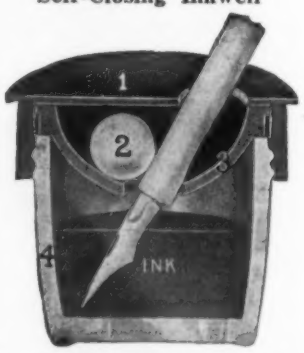
Our No. 12 or Common Sense Inkwell is made in three sizes, to fit holes 1½", 1¾" or 1⅞". Corks with Caps or Rubber Corks furnished at same price.

Squires No. 14 Self-Closing Inkwell



No. 14 Self-Closing Inkwell has a Hard Rubber Top and fits a 2 inch hole. It is the best inkwell on the market.

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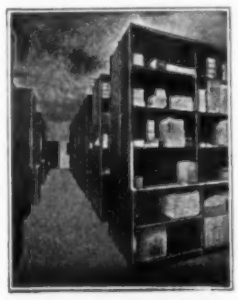

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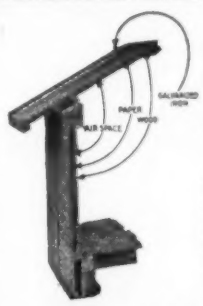

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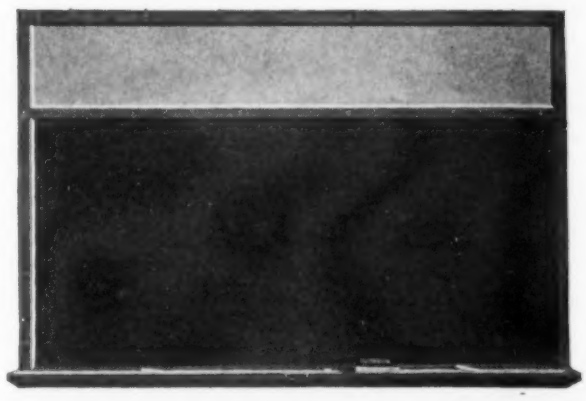

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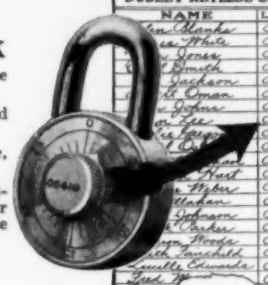

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DUDLEY KEYLESS COMBINATION LOCKS

NAME	Lock No.	Right	Left	Right
[illegible]	06233	24	11	28
[illegible]	04426	6	10	29
[illegible]	07145	8	20	21
[illegible]	04420	10	23	4
[illegible]	04217	9	18	7
[illegible]	05145	5	22	17
[illegible]	07317	28	3	0
[illegible]	05419	4	9	26
[illegible]	04378	17	6	20
[illegible]	08123	21	12	16
[illegible]	04672	16	6	10
[illegible]	06317	3	7	11
[illegible]	08142	15	6	22
[illegible]	04615	7	19	27
[illegible]	04248	11	26	4
[illegible]	06316	7	13	29
[illegible]	07033	23	7	17
[illegible]	03177	14	12	3
[illegible]	04816	6	28	18
[illegible]	05792	2	[illegible]	24
	163			

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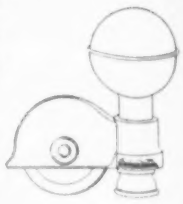

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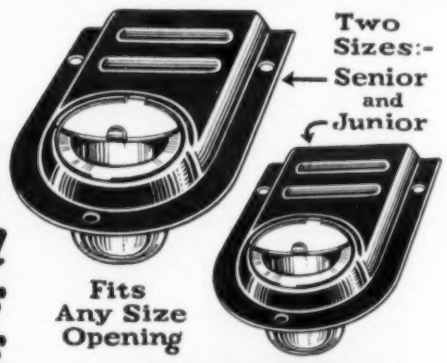

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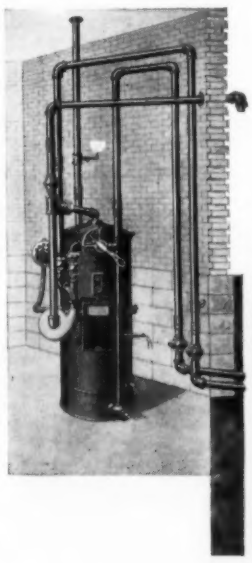

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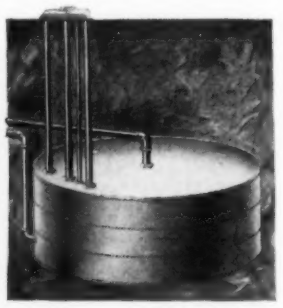

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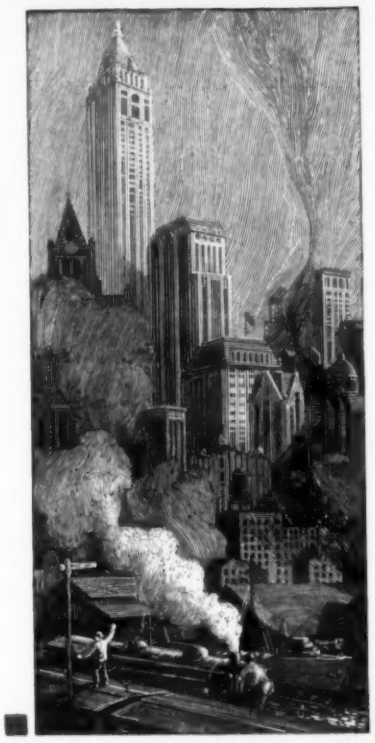

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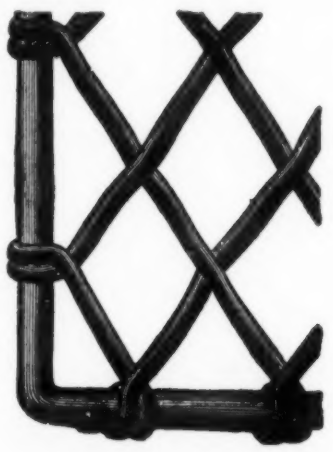

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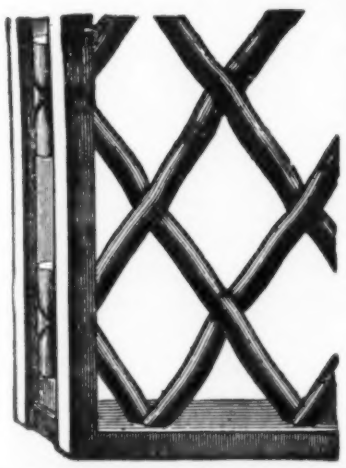

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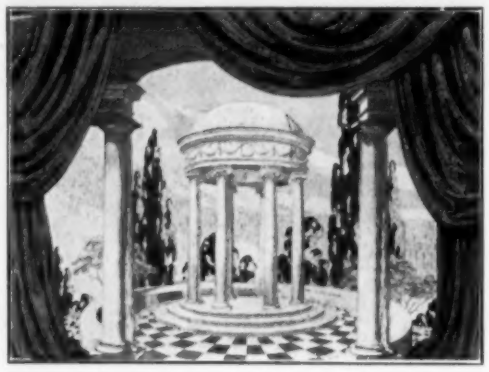

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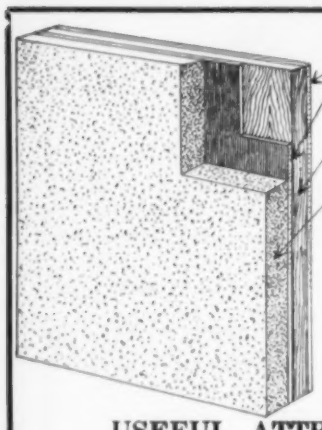

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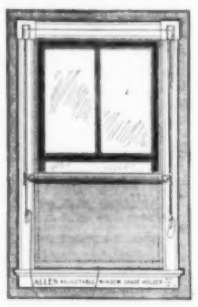

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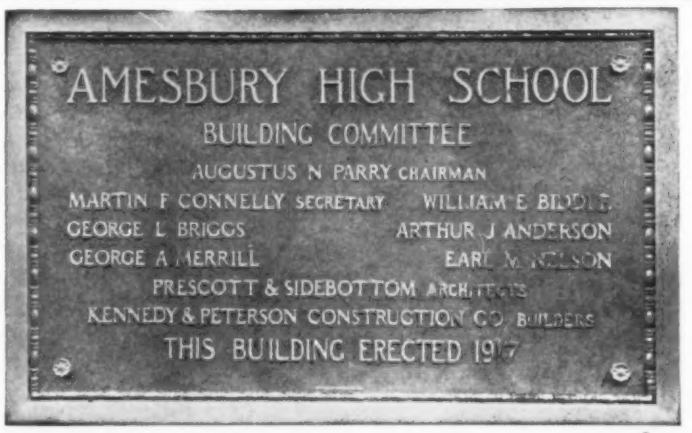

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We Render Efficient Service to School Boards and Teachers
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Receives calls at all seasons for college and normal graduates, specialists, and other teachers in colleges, public and private schools, in all parts of the country. Advises parents about schools.

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Established 1885—Still under same active management. Best Schools and Colleges permanent clients. Best qualified men and women on our available list. Prompt service.
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THIS convenient cabinet keeps Nibroc Towels clean and dust-free, and serves them singly.

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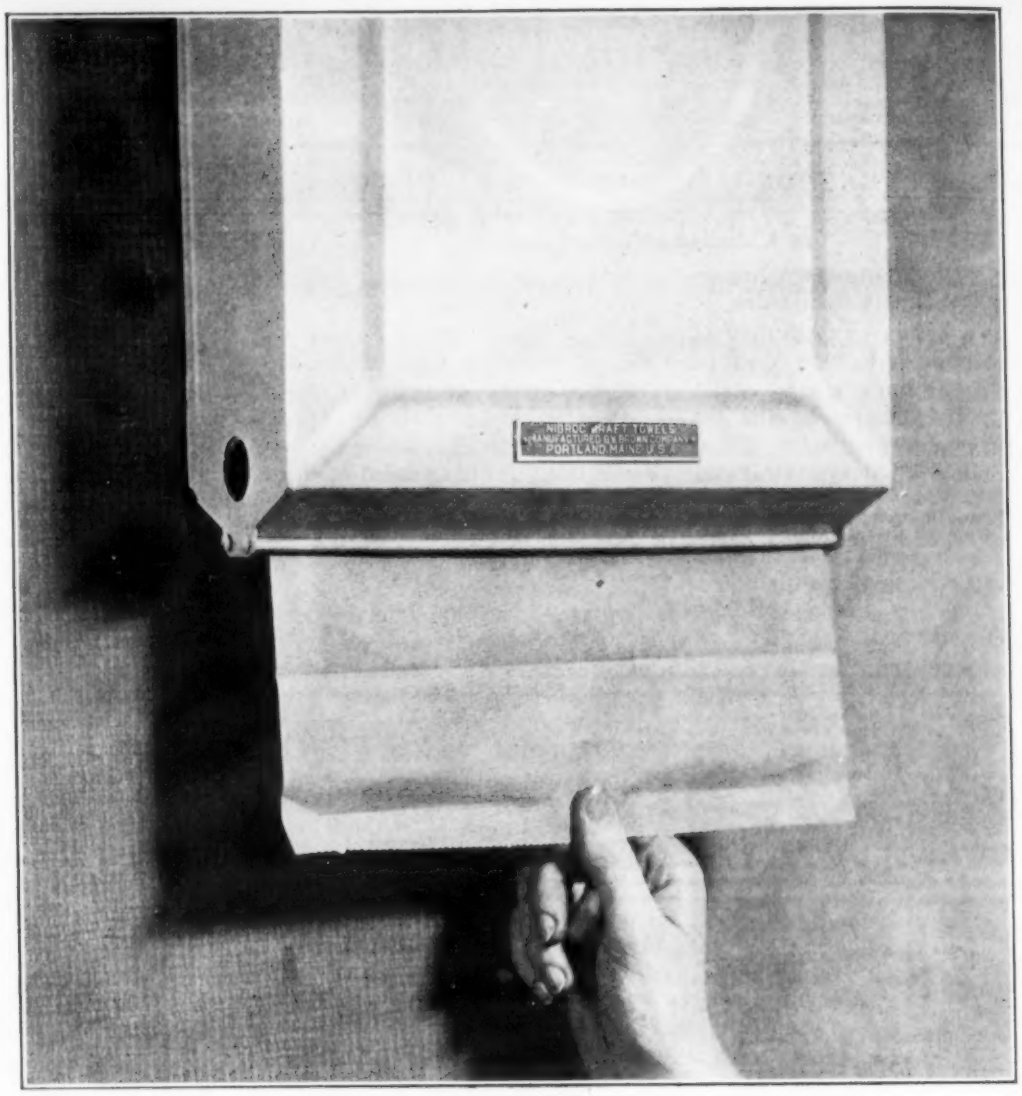
Merely open front, which is hinged at bottom. Slip the package of 250 towels into place. Draw out wrapper. Lock cabinet. That's all.



Nibroc—a paper towel

that seems made for school children

If the Nibroc Towel were made especially to your order, it could not be better suited to school use.

The Nibroc fibre is highly absorbent—takes up the last drop of moisture. It doesn't lint—doesn't tear easily—doesn't get soggy. You can wipe hands and face vigorously with a Nibroc Towel. It is agreeable to use, and leaves a pleasant feeling that encourages children to be clean.

The Nibroc Towel doesn't roughen the hands.

It means a fresh, clean towel for every child. Used once, then thrown away, it doesn't spread colds through the class, as a common towel is apt to. It is economical, too. The Nibroc Cabinet serves one at a time, enough to thoroughly dry both face and hands.

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The manufacturers, Brown Company, Portland, Maine, will be pleased to mail to members of School Boards or of any educational institution a sample pack of Nibroc Towels.

School Board Journal

DIRECTORY OF EQUIPMENT AND SUPPLIES

The names given below are those of the leading and most reliable Manufacturers, Publishers and Dealers in the United States. None other can receive a place in this Directory. Everything required in or about a schoolhouse may be secured promptly and at the lowest market price by ordering from these Firms.

AIR CONDITIONING APPARATUS
Air Conditioning & Engineering Co.
American Blower Company
Buckeye Blower Company
Buffalo Forge Company
Nelson Corporation, The Herman
Reed Air Filters, Inc.
AIR FILTERS
Reed Air Filters, Inc.
ASH HOISTS
Gillis & Geoghegan
AUDITORIUM SCENERY
Kansas City Scenic Company
AUDITORIUM SEATING
American Seating Co.
Arlington Seating Company
Derby & Company, Inc., P.
Heywood-Wakefield Co.
Kundtz Company, The Theodor
Newton & Holt Company, The
Peabody School Furniture Co.
Progressive Seating Company
Steel Furniture Company
BASEMENT SASH, STEEL
Detroit Steel Products Company
BASEMENT WINDOWS, STEEL
Detroit Steel Products Company
BENCH LEGS
Angle Steel Stool Company
BLACKBOARDS—COMPOSITION
Beaver Products Co., Inc., The
Beckley-Cardy Co.
N. Y. Silicate Book Slate Co.
Rowles Co., E. W. A.
Standard Blackboard Company
Weber Costello Co.
BLACKBOARD-SLATE
Keenan Structural Slate Co.
Natural Slate Blackboard Co.
Penna. Structural Slate Co.
BLEACHERS
Circle A Products Corp.
BOILERS
Kewanee Boiler Company
BOOK CASES
Library Bureau
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Holden Patent Book Cover Co.
Iroquois Publishing Company
Peckham, Little & Co.
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American Book Company
Bruce Publishing Co.
Heath & Co., D. C.
Houghton, Mifflin Co.
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Milwaukee Corrugating Company
National Slate Association
Structural Slate Company
Truscon Steel Company
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Van Range Co., John
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Hansen Manufacturing Company
International Time Recording Company
Landis Eng. & Mfg. Co.
Standard Electric Time Co.
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Niagara Clock Corporation
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American Crayon Co.
Binney & Smith
National Crayon Co.
Peckham, Little & Co.
Rowles Co., E. W. A.
Weber Costello Co.
CRAYON TROUGHS
Dudfield Manufacturing Co.
DEAFENING QUILT
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Welfare, Inc.
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Colt's Patent Fire Arms Mfg. Co.
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Shewana Cabinet Works
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Peterson & Co., Leonard
Pick & Co., Albert
Sheldon & Co., E. H.
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Van Range Co., John
DOOR CHECKS
Norton Door Closer Co.
Sargent & Company
DOORS, STEEL-FIREPROOF
Detroit Steel Products Company
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Angle Steel Stool Company
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Economy Drawing Table & Mfg. Co.
Kewaunee Mfg. Company
Sheldon & Co., E. H.
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Clow & Sons, James B.
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Puro Sanitary Drink. Fountain Co.
Rundle-Spence Mfg. Company
Taylor Company, Hasley W.
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Rowles Company, E. W. A.
Weber Costello Co.
ERASER CLEANERS
Weber Costello Company

FENCES
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Anchor Post Iron Works
Cyclone Fence Co.
Page Fence & Wire Prod. Assn.
Stewart Iron Works Company, The
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Library Bureau
Newton & Holt Company, The
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Dow Company, The
Potter Manufacturing Corp.
Standard Conveyor Company
FIRE EXIT LATCHES
Sargent & Company
Steffens-Amberg Company
Vonnegut Hardware Co.
FIRE PROOF DOORS
Dahlstrom Metallic Door Co.
FIREPROOFING MATERIALS
Asbestos Buildings Company
FLAGS
Annin & Co.
Dettra & Co., Inc., John C.
Milwaukee Corrugating Company
FLAG POLES
Newark Steel Post Company
Nelson Mfg. Co., N. O.
FLOOR COVERING
Bonded Floors Co., Inc.
Heywood-Wakefield Co.
Marbleloid Company
FLOORING—COMPOSITION
Bonded Floors Co., Inc.
Durafiex Company, The
Marbleloid Company
FLOORING—MASTIC
Moulding Brick Company, Thos.
FLOOR TILE
Norton Company
FLUSH VALVES
Clow & Sons, James B.
Haas Company, Philip
FOLDING PARTITIONS
Wilson Corp., Jas. G.
FURNITURE
American Seating Co.
Angle Steel Stool Company
Arlington Seating Company
Beckley-Cardy Co.
Columbia School Supply Company
Conrades Mfg. Company
Derby & Company, Inc., P.
Detroit School Equipment Co.
Economy Drawing Table & Mfg. Co.
Heywood-Wakefield Co.
Gunn Furniture Company
Inner Braced Sales Company
Kundtz Company, The Theo.
Library Bureau
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National School Equipment Company
Newton & Holt Company, The
Peabody School Furniture Co.
Progressive Seating Company
Readsboro Chair Company
Rowles Co., E. W. A.
Scientific Seating, Inc.
Steel Furniture Company
Standard School Equipment Co
Union School Furnishing Company
Welfare, Inc.
GAS MACHINES
Matthews Gas Machine Co.
GAS STOVES
A. B. Stove Company
GLASS
Manufacturers Glass Company
GLOBES
Nystrom & Co., A. J.
Weber Costello Co.
GLUE
Higgins & Company, Charles M
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Medart Mfg. Co., Fred
Narragansett Machine Company
GYMNASIUM BASKETS
Racine Iron & Wire Works
HEATING SYSTEMS
American Blower Company
American Foundry & Furnace Co
Bayley Mfg. Company
Buckeye Blower Co.
Buffalo Forge Company
Clow & Sons, James B. ("Gasteam")
Dunham Company, C. A.
Healy-Ruff Company
Nelson Corp., The Herman
Peerless Unit Vent. Co., Inc.
Webster & Co., Warren

INK
Commercial Paste Company
F. N. Company, Inc., The
Higgins & Company, Charles M.
Rowles Co., E. W. A.
INK WELLS
Jacobus Pneumatic Inkwell Co.
Squires Inkwell Company
U. S. Inkwell Company
JANITORS' SUPPLIES
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Palmer Company, The
Pick & Co., Albert
Robertson Products Co, Theo. B.
Van Range Co., John
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Angle Steel Stool Company
Kewaunee Mfg. Company
Newton & Holt Company, The
Peterson & Co., Leonard
Sheldon & Company, E. H.
LABORATORY SUPPLIES
Chicago Apparatus Co.
LANTERN SLIDES
Keystone View Company
LATHES
Greenfield Tap & Die Corporation
LIBRARY FURNITURE
Library Bureau
Newton & Holt Company, The
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Beardslee Chandelier Mfg. Co.
Guth Company, Edwin F.
Holophane Glass Company
LINOLEUMS
Bonded Floors Co., Inc.
LIQUID FLOOR HARDENER
Sonneborn Sons, L.
LIQUID SOAP
Huntington Laboratories, Inc.
Robertson Products Co., Theo. B.
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Berger Mfg. Company
Durabilt Steel Locker Co.
Durand Steel Locker Co.
Federal Steel Fixture Co.
Lyon Metallic Mfg. Co.
Medart Mfg. Co., Fred
Narragansett Machine Company
LOCKS—KEYLESS
Miller Keyless Lock Co., J. B.
Triple Metals Corporation

MAPS
Nystrom & Company, A. J.
Weber Costello Company
MEMORIAL TABLETS
Russell & Sons Co., Albert
METAL LATH
Berger Mfg. Company
Milwaukee Corrugating Company
METAL CHALK RAILS
Milwaukee Corrugating Company
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Spencer Lens Company
MOTION PICTURE MACHINES
DeVry Corporation, The
OIL FILTERS
Burt Manufacturing Co., The
OILING SYSTEMS
Burt Manufacturing Co., The
PAINTS
Hockaday Company, The
Tropical Paint & Oil Co., The
PAINT SPRAYING EQUIPMENT
DeVilbiss Mfg. Co., The
PANIC EXIT DEVICES
Steffens-Amberg Company
PASTE
Commercial Paste Company
PENCILS
Dixon Crucible Co., Joseph
PENCIL SHARPENERS
Automatic Pencil Sharpener Co.
PIANOS
Aeolain Company, The
Miessner Piano Company

PLAYGROUND APPARATUS
Chicago Gymnasium Equipment Co.
Hill-Standard Company
Medart Mfg. Co., Fred
Narragansett Machine Company
Newark Steel Post Company
Zieg Mfg. Company, The F. B.
PLUMBING FIXTURES
Bradley Wash Fountain Company
Brunswick-Balke-Collender Co.
Clow & Sons, James B.
Durlron Co., Inc., The
Haas Company, Philip
Hoffmann & Billings Mfg. Co.
Nelson Mfg. Company, N. O.
Rundle-Spence Mfg. Company
Speakman Co.
Vogel Company, Joseph A.
PORTABLE SCHOOLHOUSES
American Portable House Company
Armstrong Co., The
Asbestos Buildings Co.
Bossert & Sons, Louis
Circle A Products Corporation
Mershon & Morley
Togan-Stiles Company
PROJECTION LANTERNS
Spencer Lens Co.
PUBLISHERS
Longmans, Green & Company
RADIATOR HANGERS
Healy-Ruff Company
REINFORCED STEEL
Berger Mfg. Co.
ROLLING PARTITIONS
Union Blind & Ladder Company, Inc.
Wilson Corp., Jas. G.
SAFETY STAIR TREADS
American Abrasive Metals Company
SASH OPERATING DEVICES, STEEL
Detroit Steel Products Company
SASH, STEEL
Detroit Steel Products Company
SASH, VENTILATING
Detroit Steel Products Company
SCENERY
Twin City Scenic Co
SCIENTIFIC APPARATUS
Chicago Apparatus Co
Rowles Company, E. W. A.
SCRUBBING EQUIPMENT
American Scrubbing Equipment Sales Company
SHOWERS
Clow & Sons, James B.
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Speakman Co.
SIGNAL SYSTEMS
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SPRAY-PAINTING EQUIPMENT
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STAGE EQUIPMENT AND SCENERY
Jackson Corp., A P
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Novelty Scenic Studios
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STEEL CASINGS (Doors and Windows)
Milwaukee Corrugating Company
STAIR TREADS
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STEEL SASHES
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Newton & Holt Company, The
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Medart Mfg. Co., Fred
STEEL TENNIS POSTS
Newark Steel Post Company
STEEL WINDOWS
Detroit Steel Products Company
STOOLS, STEEL
Angle Steel Stool Company
SWEEPING COMPOUNDS
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TABLES
Gunn Furniture Company
Derby & Company, Inc., P.
Library Bureau
Newton & Holt Company, The
Rinehimer Bros. Mfg. Co.
TABLETS
Blair Company, J. C.
TALKING MACHINES
Victor Talking Machine Co.
TELEPHONE SYSTEMS
Automatic Eelectric Company
Federal Electric Co., The
Federal Tel. & Tel. Co.
Holtzer-Cabot Electric Co.
TEMPERATURE REGULATION
Buffalo Forge Company
Johnson Service Company
National Regulator Company
THERMOMETERS
Wilder-Pike Thermometer Co
TOILET PAPER AND FIXTURES
A. P. W. Paper Company
Palmer Company, The
Robertson Products Co., Theo. B.
TOILET PARTITIONS
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Sanymetal Products Company
Structural Slate Company

TOWELS
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A. P. W. Paper Company
Brown Company
National Paper Products Co.
Palmer Co., The
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TYPEWRITERS
Underwood Typewriter Company
VACUUM CLEANING SYSTEMS
Spencer Turbine Company, The
VACUUM PUMPS
Nash Engineering Company
VALVES—FITTINGS
Clow & Sons, James B.
VARNISHES
Valentine & Company
VENTILATORS
Buffalo Forge Company
Burt Manufacturing Co., The
Globe Ventilator Company
Knowles Mushroom Ventilator Co
Milwaukee Corrugating Company
VENTILATING SYSTEMS
American Foundry & Furnace Co.
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Buffalo Forge Company
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National Vulcanized Fibre Company
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Austral Window Company
Detroit Steel Products Company
Truscon Steel Company
WINDOW GUARDS
Badger Wire & Iron Works
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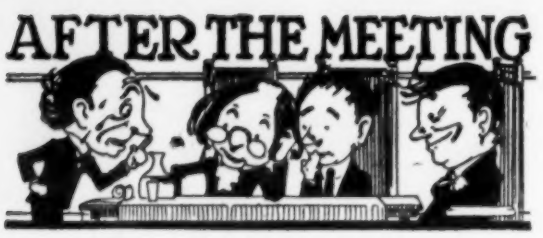

Let the Printers Do It

In the opinion of many literary men, printers can read any sort of handwriting. It is related that the editorial staff of the New York Sun once played a practical joke on Horace Greeley's favorite compositor by dipping a kitten's feet into an ink bottle and allowing the animal to dabble around on several sheets of white paper. The resulting "copy" was carefully blotted and sent to the composing room where it was duly set in type.

Along the same line is related that the late Dr. W. T. Harris once came to a St. Louis printer with a sheaf of manuscript and demanded that proofs of it be sent him within two days. When the printer asked for an extension of time Dr. Harris said in his inimitable way: "No, I must deliver this paper at a teachers' convention tomorrow. I wrote it nearly a year ago and I'll be hanged if I can decipher a word of it."

Youth's Fancy

"So your son has finished his college course. What is he going to specialize in?"

"Well, just at present he's specializing in socks and neckties."

The Easy Life

"You college men seem to take like pretty easy."

"Yes; even when we graduate we do it by degrees."—Boston Transcript.

When Silence Is Not Golden

"What do you know about the language of the flowers, Bill?" asked the latter's college roommate.

"Well," said Bill, "I know this much about it: a five-dollar box of roses talks a heap louder to a girl than a fifty-cent bunch of carnations."—Ladies' Home Journal.

Some People Laugh at Things Like This!

"Who discovered America?"

"Ohio," replied the little girl.

"No; Columbus discovered America."

"Yes'm. Columbus was his first name."—The Milk Dealer.

A Simple Problem

The skipper was examining an ambitious gob who wanted to be a gunner's mate.

"How much does a six-pound shell weigh?" he asked.

"I don't know," the gob confessed.

"Well, what time does the twelve o'clock train leave?"

"Twelve o'clock."

"All right, then, how much does a six-pound shell weigh?"

"Ah," said the youthful mariner, a great light dawning on him. "Twelve pounds."—The American Legion Weekly.

Education No Longer Needed

The fair co-ed was fair, indeed, but to her lessons gave no heed. On the campus a group of female seniors had her under discussion. It was all more in sorrow than in anger.

"That girl is silly," declared one.

"So silly she'll never graduate," asserted another.

"Never mind," remarked a third, "she won't need to."

There was a big flutter over this.

"Why not?" chimed the chorus.

"One of the professors is going to marry her."

Bluebelle had been at the football game, but on her way home she tucked the college colors into her pocket, straightened her hat, and merely presented the spectacle of an attractive girl walking sedately along with a megaphone under her arm. Of course, the two girl chums who spied her did not know where she had been. She failed to see them.

"I wonder what Bluebelle wants with a megaphone," whispered one.

"Me, too," murmured the other.

"You seem disturbed about it."

"Well, I don't like the idea of her buying a megaphone. Yesterday I told her an important secret."

The Modern Version

"Now, my little men," enthusiastically said the Sunday school superintendent as he addressed a class of quite modern boys, "What lesson can we learn from the busy, busy bee?"

"I get you," said Tom.

"Well, what do you think is the lesson for good which we learn from the busy, busy bee?" asked the kind S. s. s.

The reply came promptly from Master Tom: "Not to get stung, sir."

Purely Educational

Once in an institution of learning there were two students, James and Alfred. They were brothers. James, known as Jim, was not much of a bookworm, but Alfred, on the other hand, got round-shouldered from study.

"Alfred is doing finely," said their father at home, "but I very much fear for James. He is fonder of athletics than he is of his studies."

Alfred was on the debating team, the college literary monthly, and took part in the Greek play. When graduation and class-day came, he was class poet and valedictorian. Jim played three years on the football team and three years on the nine, and in the game that took place in graduation week he made four smashing wallops and drove in seven runs with that bat of his. His father and his brother stood on the sidelines and looked on.

Both Alfred and James got jobs as a result of their college reputations. Alfred is teaching beginners' Latin in a small boarding school in Connecticut, for which he receives eight hundred dollars a year and his feed. Jim was gobbled up by a rich school for boys in Massachusetts and receives eight thousand dollars a year as an athletic coach.

MORAL—We don't dare to give it. It's too awful.

Simple

Professor—"I'm sorry to tell you, madam, that your daughter is hopeless. She has no talent."

Mrs. Lowell Brow—"Huh! I thought I was paying you to give her some."—N. Y. World.

A teacher in an elementary school had given lessons to an infants' class on the ten commandments. In order to test their memories she asked:

"Can any little child give me a commandment containing only four words?"

A hand was raised immediately.

"Well?" said the teacher.

"Keep off the grass," was the unexpected reply.

CHATS DURING RECESS

—Two members of the Middletown, Ohio, board of education were out of town and absent from meetings so frequently that their seats were declared forfeited and others chosen in their place. The Middletown News exclaims: "Well! Well! Of all things!—And the skids were really handmade, and applied without preliminary ceremony? They should have given the members an opportunity to resign, but Nay Verily. They must go while the going was good and their successors appointed. But wait till they come back. Oh Boy! It is said that there will be a noise from Dan to Beersheba. No, it was not polite, but it was an amputation that was necessary. The school board members should live in Middletown and should be directly interested in the welfare of the children of our schools."

The Head of the Class, James!

"James, spell cloth," said the teacher.

James was silent.

"Come, come," said the teacher impatiently. "You know the word. What is your coat made of?"

"Father's old pants," replied the boy.

—Youths' Companion.

CATALOGS AND SPECIFICATIONS

(Concluded from Page 154)

THE BURT MFG. CO., Akron, Ohio, manufacturers of ventilators. The Burt Ventilator booklet describes the complete line of ventilators manufactured by this company. The Burt ventilators are manufactured in various kinds and sizes to meet the varying conditions in connection with ventilation in schools. A list of school installations in every section of the country showing the wide service of Burt Ventilators is included. This company maintains an engineering service department to cooperate with school officials and architects in solving their ventilating problems through the use of Burt Ventilators.

THE HOLTZER-CABOT ELECTRIC CO., Boston, Mass., branch offices in the principal cities. Telephone Systems for Schools, booklet No. 14800 contains complete information relative to the requirements of school telephone systems, with detailed description of the different units necessary. Program Bells for Schools, booklet No. 15103A outlines in detail the requirements for program bells for schools, showing classroom, corridor, and school yard bells. Classroom signals, corridor signals, school yard signals are fully described. Fire Alarm Systems for Schools, booklet No. 16304A is published to assist school officials and school architects to adopt the correct type of fire alarm system for any class of school building. Information relative to the requirements of school fire alarm systems, the stations, sounding devices and supervising apparatus is contained in this booklet with detailed description of the different units. The engineering service department of this company is maintained for the purpose of cooperating with school officials and school architects in providing layouts, complete information and data as a means of assisting in the selection of the best type of system to suit the conditions and requirements of any school.

NORTON COMPANY, Worcester, Mass., manufacturers of Norton floor products, principally classified as follows:

Alundum Floor and Stair Tile
Alundum Ceramic Mosaic Tile and Treads
Alundum Aggregates
Alundum Aggregate Tile and Treads

These products are fully described in the booklets issued by this company together with information as to colors, sizes, combinations and specifications for installing.

The Norton Company has recently perfected a series of standard sizes in floor tile and a set of standard specifications for the use of architects engaged in the construction of school buildings. The sizes take into account, number of tile per square foot, weight, and colors.

The specification data are intended for Alundum aggregates in cement floors and stairs and also for Alundum terazzo floors. Specific instructions are given for preparing mixture, for estimating the covering area, and for finishing and protecting the surface treated. Alundum terazzo floors, when constructed according to the specifications, are quiet, economical and more durable than marble terrazzo.

The firm has prepared special circulars on the subject which are available to school officials who request them.

P. H. MAGIRL FOUNDRY & FURNACE WORKS, Bloomington, Ill., manufacturers of the National System of Heating and Ventilating Apparatus. The National System of Heating and Ventilating is fully described in a pamphlet published by this company. Floor plans show typical installations of this system. The engineering department of this company is ready to cooperate with architects and school officials in solving school heating and ventilating problems.

—The new James B. Crowley school at Nashua, N. H., has been completed. It is a ten-room brick building. The board of education committee in charge of the structure were Alvin J. Lucier, Walter F. Norton, Albert J. McKean, Arthur DeMontigny, and J. C. Mandelson.

—The Dayton, Ohio, board of education is formulating its plans to carry out a $4,000,000 school building program. Bruce Lloyd has been chosen architectural agent for the board.

Medart Gym equipment is extensively used in the finest gymnasium installations.

Typical installation of single tier Medart Steel Lockers—showing both wall and back-to-back types.

Medart library shelving installed in Ritenour Consolidated High School, Overland, Mo.

The Medart Giant Stride—an especially popular piece of playground apparatus.

Steel storage cabinets offer many evident advantages.

In Planning New Equipment *for* 1925

You will undoubtedly include physical education and storage equipment of all kinds. Locker, gymnasium and playground installations, planned and executed by Medart engineers, have contributed to the beauty, efficiency and convenience of our schools for over 50 years. All the knowledge and experience accumulated during this time are at your disposal, without charge.

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Steel Lockers

Medart steel lockers are generally recognized as the ultimate in refinement and durability. Standard finishes are Olive Green or French Gray—also supplied in grained walnut or mahogany to harmonize with woodwork. All types are available: single tier (illustrated), double tier, or recessed in wall. Complete descriptions can be found in 40-page Catalog A-2.

Library Shelving

Medart library shelving is ideal and inexpensive for book storage in schoolrooms, libraries and offices. Its advantages are fully described on pages 38 and 39 of Locker Catalog A-2.

Playground Equipment

Three requirements must be met with in designing playground apparatus — attractiveness to the child, absolute safety under the most severe treatment, and a rugged durability which will withstand all weather conditions over a long period of time. The Medart organization, with a wealth of experience, have built all of these qualities into Medart Playground Apparatus. Send for 40-page Catalog M-5.

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Steel storage cabinets are useful in storing books, stationery, school and janitors' supplies and such articles as must be kept from dirt, moisture, mishandling and pilfering. Medart cabinets are also made without shelves for use as wardrobes. They can be had in standard olive green finish, grained mahogany or grained walnut. All four sizes and types are fully illustrated and described in Bulletin C-1.

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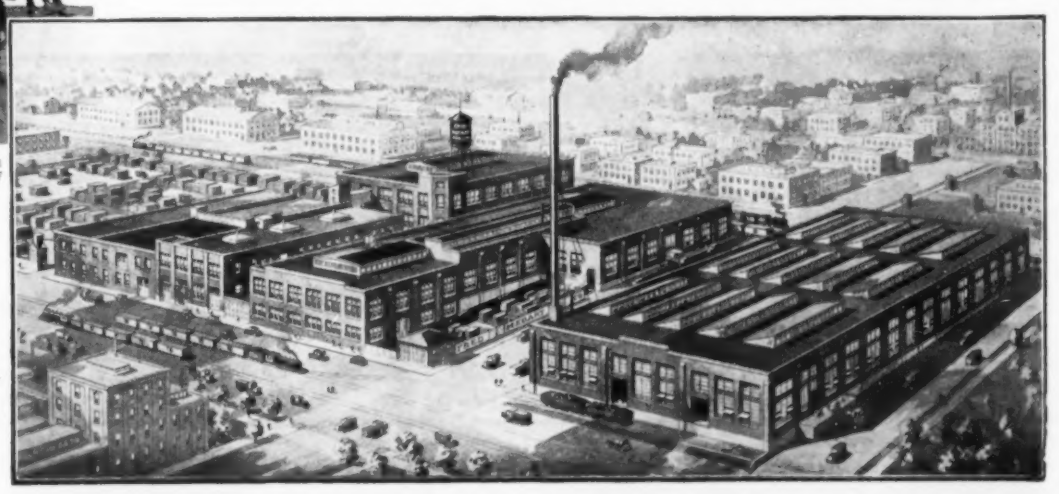
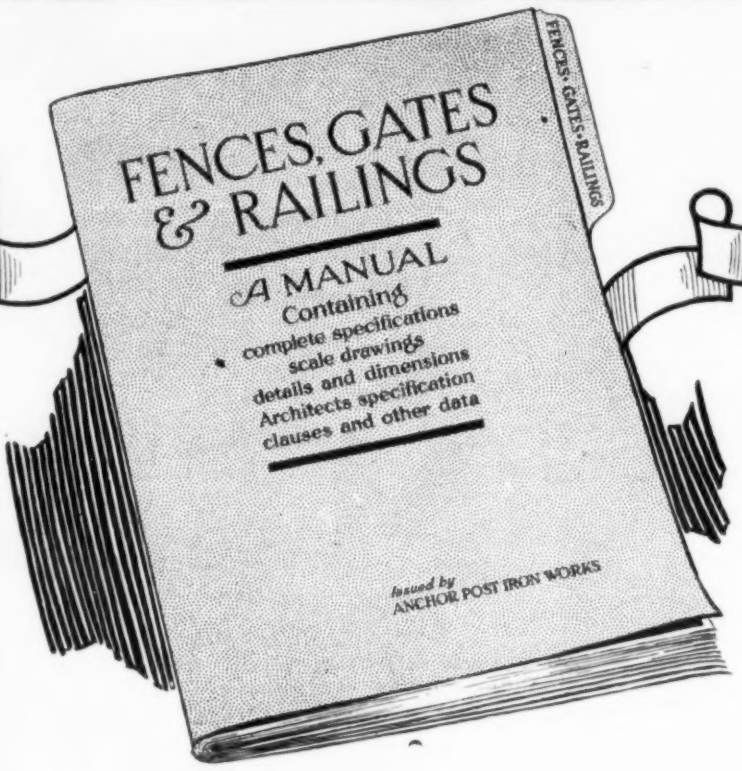


Fences you can Specify with Confidence

Safe from traffic dangers. Municipal Playground at Bayside Park, Jersey City, New Jersey.



Anchor Electric Weld Railing and Gate at Hartford High School, Hartford, Conn.

Anchor Baseball Backstop, 10′ in height.

Anchor Chain Link Fence at Kenilworth Place School, Ridgewood, N. J.

Protecting the children with Anchor Fence at Vaux Hall School, Union, N. J.

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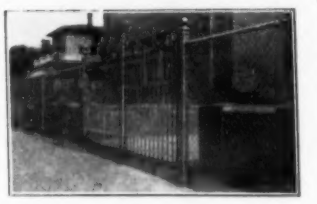

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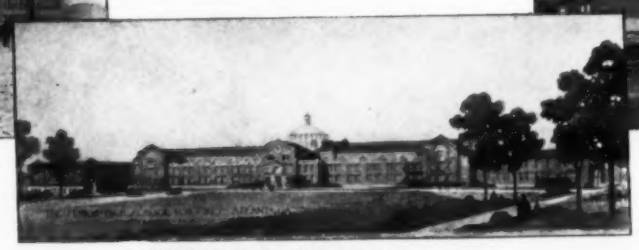

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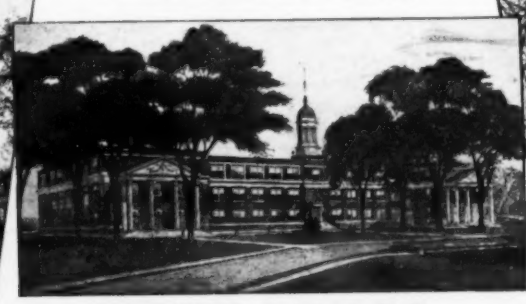

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